

Supporting Information (SI)

The supporting information document contains additional information on:

- Natural variation in surface temperature during the study (Figure S1)
- Photo examples of the newly created ground ice (Figure S2)
- Ordination of species composition (Figure S3) and a species list (Table S3)
- The protocols used for obtaining species carbon assimilation rates and chlorophyll fluorescence (Table S1)
- Average snow depths and snowmelt dates in the plots (Table S2)
- Linear mixed-effects model output for summer ecophysiology parameters (Table S4 and Table S5) and MANOVA statistics

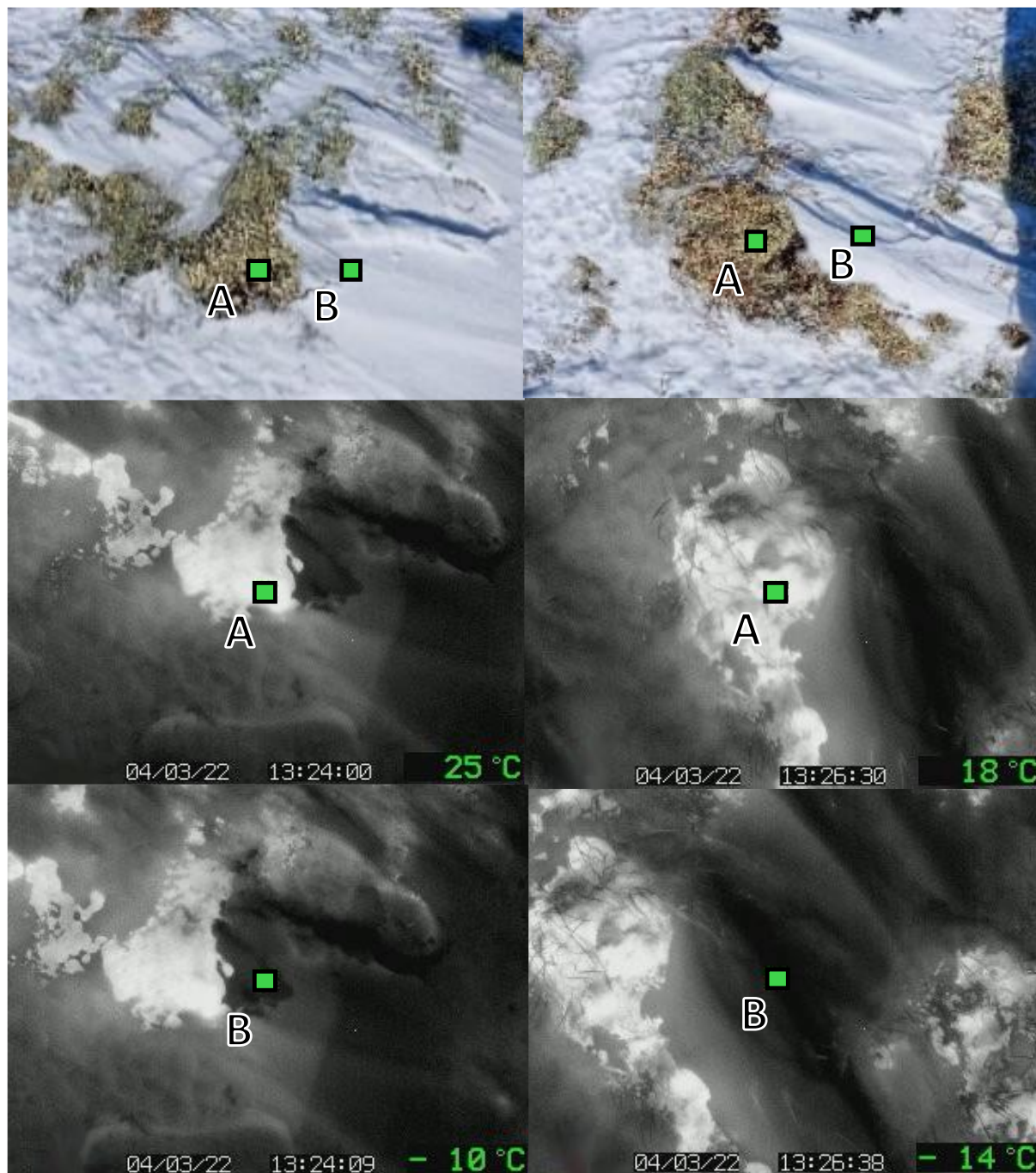


Fig. S1: Surface temperatures of partly exposed lichen-heath adjacent to the field experiment on a sunny day on March 4th, 2022. The top row depicts RGB images with the point temperature measurements as green boxes. The middle row shows the surface temperatures on the snowless lichens (25 and 18 °C in the centre, respectively). The bottom row shows the adjacent snow surface temperatures (-10 and -14 °C in the centre, respectively). Thermal images were captured with a Mi-TIC E high resolution thermal imager (Avon Products, Inc., London).

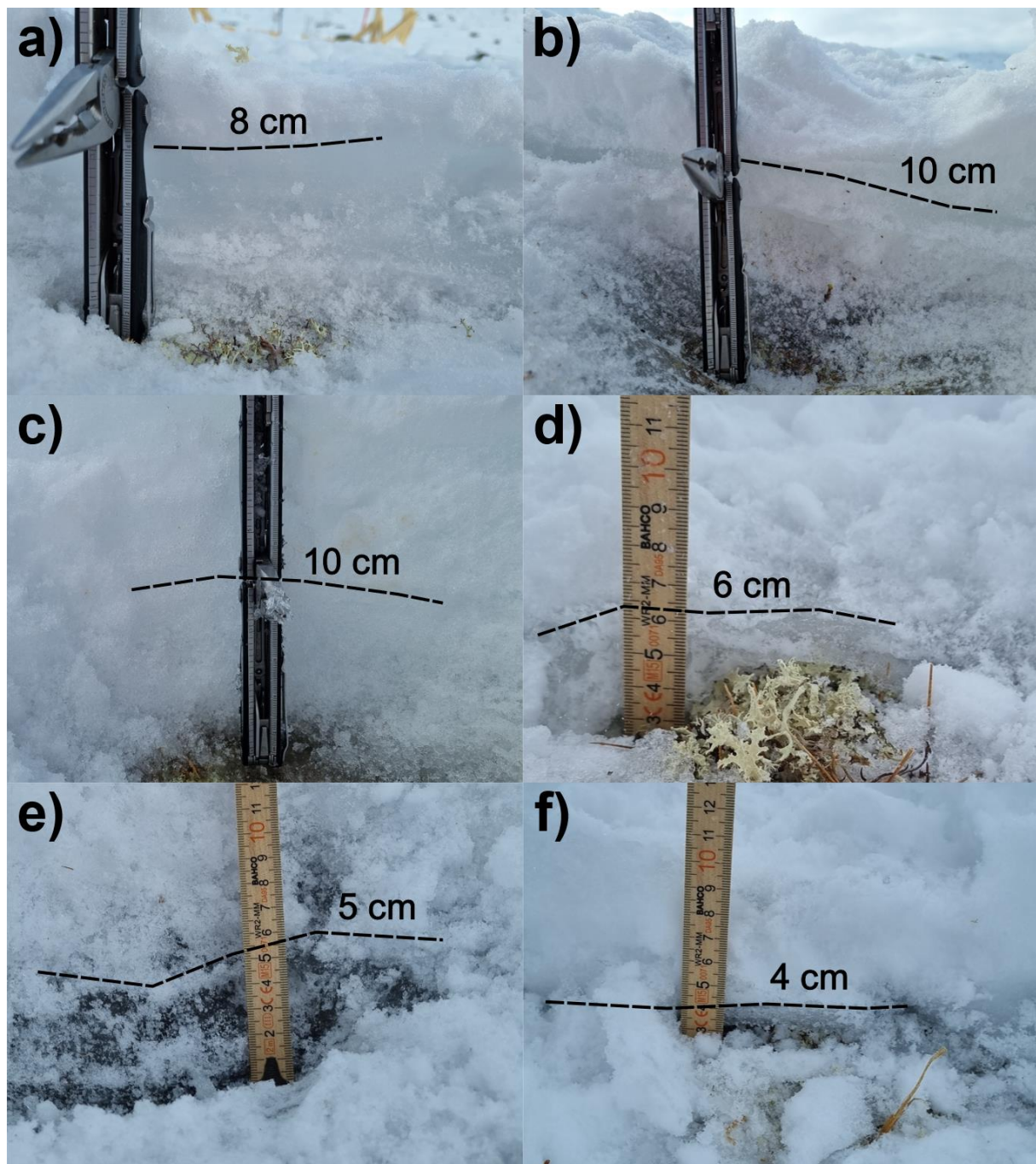


Fig. S2: Examples of ground ice build-up after the ice encasement (IE) in 2021, image **a)-f)** corresponds to IE plot 1-6. Approximate ice thickness is shown as a dark dashed line, with height in cm, varying between 4 and 10 cm. These measurements were taken at the plot margins, not to disturb the vegetation inside the plots.

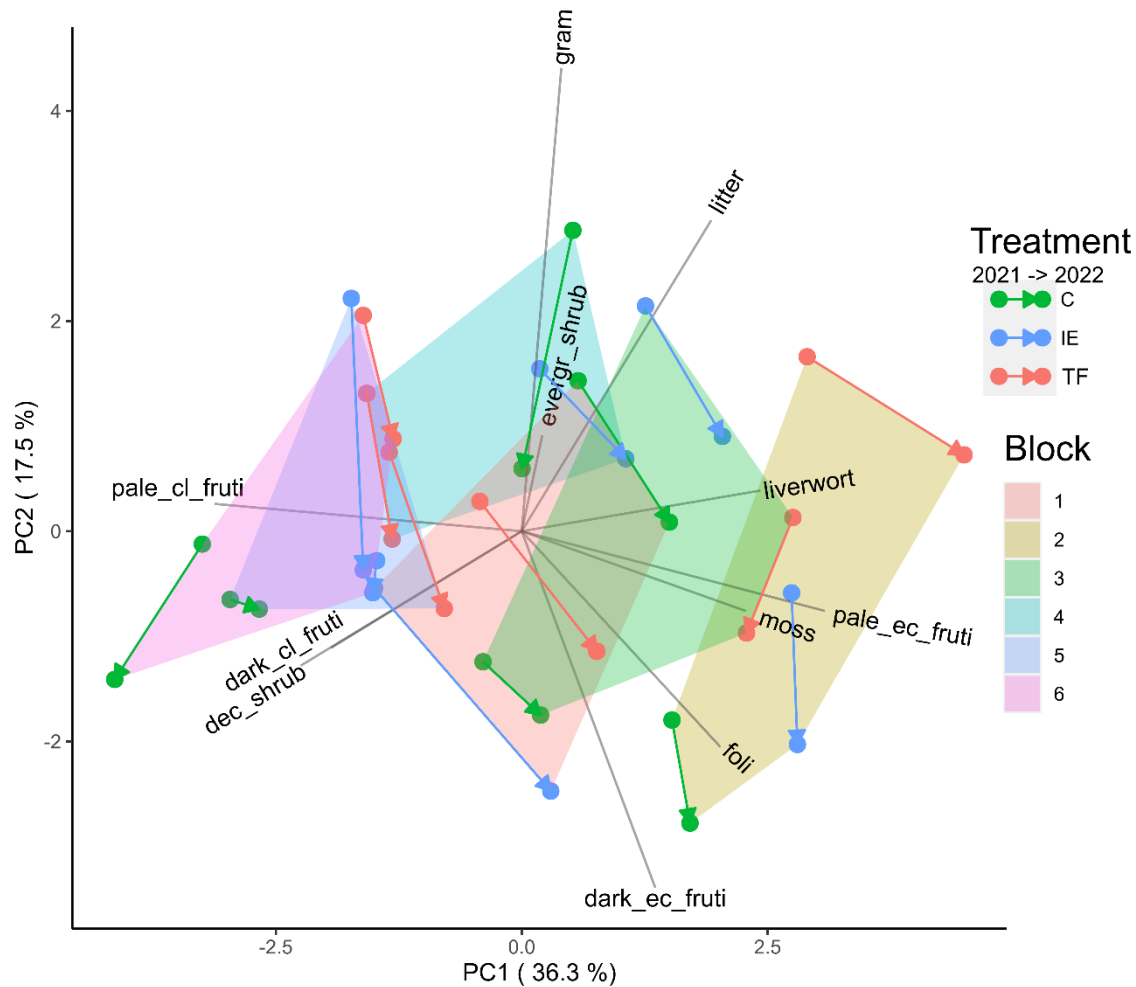


Fig. S3: PCA biplot of species functional group composition in plots from point-intercept analysis. The shaded polygons outline the position of the six blocks (ID 1-6), containing the plots TF (thaw-freeze, red), IE (ice encasement, blue) and C (control, green). The point pairs connected by arrows represent each subplot, where the origin of the arrow is results from 2021 and the end of the arrow is 2022 results. Grey lines show the orientation of increased abundance of each functional group in ordination space, and the length denotes the strength of this relationship. Functional groups are labelled with their short name, see Table S3 for full names and which species the different groups include.

Table S1: Protocols used with the GFS-3000FS. “DR” for dark respiration and “Light” for the illuminated run.

DR	Light
"Remark =", "----Settings Timing----"	"Remark =", "----Settings Timing----"
"Storing Interval =", "005/020"	"Storing Interval =", "005/030"
"1Yield/y*MP =", "3"	"1Yield/y*MP =", "3"
"Remark =", "----Settings Meas. Head----"	"Remark =", "----Settings Meas. Head----"
"Impeller =", "5"	"Impeller =", "5"
"Set Tcuv =", "12.0"	"Set Tcuv =", "12.0"
"Set PARtop =", "0"	"Set PARtop =", "800"
"Remark =", "----Settings Central Unit----"	"Remark =", "----Settings Central Unit----"
"Set Flow =", "750"	"Set Flow =", "750"
"Set CO2 =", "400"	"Set CO2 =", "400"
"Set H2O(ppm) =", "3000"	"Set H2O(ppm) =", "3000"
"Mode =", "MP"	"Mode =", "MP"
"Remark =", "----Fluorescence----"	"Remark =", "----Fluorescence----"
"Remark =", "----Fluorescence Module 3055-FL---"	"Remark =", "----Fluorescence Module 3055-FL---"
"Fo'-Mode FL =", "off"	"Fo'-Mode FL =", "off"
"Gain FL =", "low"	"Gain FL =", "low"
"FarRed FL =", "off"	"FarRed FL =", "off"
"M-Light FL =", "on"	"M-Light FL =", "on"
"SatWidth FL =", "0.6"	"SatWidth FL =", "0.6"
"Sat-Int FL =", "12"	"Sat-Int FL =", "12"
"ML-Amp FL =", "10"	"ML-Amp FL =", "10"
"FR-Int FL =", "12"	"FR-Int FL =", "12"
"ETR-Fact FL =", "0.84"	"ETR-Fact FL =", "0.84"
"Remark =", "----Settings End----"	"Remark =", "----Settings End----"
"Remark =", "time to stabilize, dark adapt, relax ..."	"Remark =", "time to stabilize"
"Interval =", "240"	"Interval =", "180"
"Auto ZP =", "010/060"	"Auto ZP =", "010/060"
"Fv/Fm", ""	"Fv/Fm", ""
"Interval =", "2"	"Interval =", "15"
"Start storing", ""	"Start storing", ""
"Interval =", "90"	"Interval =", "120"
"Stop storing", ""	"Stop storing", ""
"Impeller =", "1"	"Impeller =", "3"
"Remark =", "----Settings End----"	"Remark =", "----System off, but keep flow for sample---"
	"Remark =", "----Settings Meas. Head ----"
	"Remark =", "----Settings End----"

Table S2: Blocks and plots characteristics. Snow depth as an average of depths at the start of the winter plot manipulations. Snowmelt as the first day with melt out.

Block	Plot	Snow depth (cm)	Snowmelt 2021	Snowmelt 2022
1	1 – C	10	15.04.2021	26.04.2022
1	1 – IE	10	13.04.2021	25.04.2022
1	1 – TF	10	16.04.2021	25.04.2022
2	2 – C	40	10.05.2021	18.05.2022
2	2 – IE	40	11.05.2021	18.05.2022
2	2 – TF	40	10.05.2021	18.05.2022
3	3 – C	20	12.05.2021	23.04.2022
3	3 – IE	20	12.05.2021	24.04.2022
3	3 – TF	20	13.05.2021	25.04.2022
4	4 – C	15	17.04.2021	29.04.2022
4	4 – IE	15	23.04.2021	05.05.2022
4	4 – TF	15	26.04.2021	28.04.2022
5	5 – C	4	17.04.2021	20.04.2022
5	5 – IE	4	14.04.2021	20.04.2022
5	5 – TF	4	13.04.2021	19.04.2022
6	6 – C	4	13.04.2021	14.04.2022
6	6 – IE	4	12.04.2021	29.04.2022
6	6 – TF	4	12.04.2021	14.04.2022

Table S3: Species list and corresponding functional group

Species	Author	Functional group	Functional group short
<i>Cladonia arbuscula</i>	<i>Cladonia arbuscula</i>	Pale ecorticate fruticose lichen	pale_el_fruti
<i>Cladonia mitis</i>	Sandst.	Pale ecorticate fruticose lichen	pale_el_fruti
<i>Cladonia stygia</i>	(Fr.) Ruoss	Dark ecorticate fruticose lichen	dark_el_fruti
<i>Alectoria ochroleuca</i>	(Schrank) A.Massal.	Pale corticate fruticose lichen	pale_cl_fruti
<i>Cladonia</i> sp.	P.Browne	Pale corticate fruticose lichen	pale_cl_fruti
<i>Nephromopsis nivalis</i>	(L.) Divakar, A.Crespo & Lumbsch	Pale corticate fruticose lichen	pale_cl_fruti
<i>Nephromopsis cucullata</i>	(Bellardi) Divakar, A.Crespo & Lumbsch	Pale corticate fruticose lichen	pale_cl_fruti
<i>Stereocaulon paschale</i>	(L.) Hoffm.	Pale corticate fruticose lichen	pale_cl_fruti
<i>Cladonia gracilis</i>	(L.) Willd.	Dark corticate fruticose lichen	dark_cl_fruti
<i>Cladonia uncialis</i>	(L.) Weber ex F.H.Wigg.	Pale corticate fruticose lichen	pale_cl_fruti
<i>Sphaerophorus globosus</i>	(Huds.) Vain.	Dark corticate fruticose lichen	dark_cl_fruti
<i>Thamnomia vermicularis</i>	(Sw.) Schaer.	Pale corticate fruticose lichen	pale_cl_fruti
<i>Cetraria islandica</i>	(L.) Ach.	Foliose lichen	foli
<i>Cetraria ericetorum</i>	Opiz	Dark corticate fruticose lichen	dark_cl_fruti
<i>Polytrichum juniperinum</i>	Hedw.	Bryophyta	moss
<i>Polytrichum strictum</i>	Menzies ex Brid.	Bryophyta	moss
<i>Dicranum</i> sp.	Hedw.	Bryophyta	moss
<i>Pleurozium schreberi</i>	(Willd. ex Brid.) Mitt.	Bryophyta	moss
<i>Andreaea rupestris</i>	Hedw.	Bryophyta	moss
<i>Ptilidium ciliare</i>	(L.) Hampe	Liverwort	liverwort
<i>Carex bigelowii</i>	Torr. ex Schwein.	Graminoid	gram
<i>Festuca ovina</i>	L.	Graminoid	gram
<i>Juncus trifidus</i>	L.	Graminoid	gram
<i>Luzula spicata</i>	(L.) DC.	Graminoid	gram
<i>Vaccinium myrtillus</i>	L.	Deciduous shrub	dec_shrub
<i>Salix lapponum</i>	L.	Deciduous shrub	dec_shrub
<i>Salix herbacea</i>	L.	Deciduous shrub	dec_shrub
<i>Vaccinium uliginosum</i>	L.	Deciduous shrub	dec_shrub
<i>Empetrum nigrum</i>	L.	Evergreen shrub	evergr_shrub
<i>Vaccinium vitis-idaea</i>	L.	Evergreen shrub	evergr_shrub

Table S4: Model estimates, with "Kenward-Roger" approximation, on linear mixed-effects models constructed with the term "response ~ treatment +DOY+(1 | Block)". Here response is the ecophysiological measure, treatment is a fixed factor variable, DOY is a fixed continuous variable describing the Julian day at sampling, and Block number is included as a random factor variable. The responses tested were chlorophyll (Chl), nitrogen (NBI) and flavonol (Flav) indices in *Carex bigelowii*, normalized difference vegetation index (NDVI), ecosystem respiration (ER) and ecosystem gross primary production (GPP), and percentage of organic litter in the plots (Litter).

Estimate	Std. Error	df	t value	Pr(> t)	response	coefficients
-469.704	47.697	27.1	-9.848	1.90E-10	Chl	(Intercept)
-8.608	2.266	27.0	-3.800	0.001	Chl	effect of IE
-4.871	2.266	27.0	-2.150	0.041	Chl	effect of TF
2.453	0.231	27.0	10.610	3.92E-11	Chl	doy
-3.811	1.293	27.1	-2.948	0.007	Flav	(Intercept)
-0.106	0.061	27.0	-1.720	0.097	Flav	effect of IE
-0.053	0.061	27.0	-0.860	0.397	Flav	effect of TF
0.024	0.006	27.0	3.829	0.001	Flav	doy
-142.645	23.373	63.7	-6.103	6.84E-08	GPP	(Intercept)
-3.327	4.370	63.0	-0.761	0.449	GPP	effect of IE
-1.374	4.370	63.0	-0.314	0.754	GPP	effect of TF
1.058	0.126	63.0	8.394	7.33E-12	GPP	doy
29.820	27.730	27.7	1.075	0.291	Litter	(Intercept)
4.250	3.443	27.0	1.234	0.228	Litter	effect of IE
5.417	3.443	27.0	1.573	0.127	Litter	effect of TF
-0.069	0.146	27.5	-0.473	0.640	Litter	doy
-250.531	33.981	27.0	-7.373	6.22E-08	NBI	(Intercept)
-4.002	1.615	27.0	-2.478	0.020	NBI	effect of IE
-2.201	1.615	27.0	-1.363	0.184	NBI	effect of TF
1.360	0.165	27.0	8.252	7.36E-09	NBI	doy
-0.029	0.034	77.2	-0.860	0.392	NDVI	(Intercept)
-0.016	0.007	99.0	-2.280	0.025	NDVI	effect of IE
-0.002	0.007	99.0	-0.342	0.733	NDVI	effect of TF
0.002	0.000	99.0	10.532	7.58E-18	NDVI	doy
80.298	18.447	64.0	4.353	4.95E-05	ER	(Intercept)
3.244	3.445	63.0	0.941	0.350	ER	effect of IE
3.990	3.445	63.0	1.158	0.251	ER	effect of TF
-0.642	0.099	63.0	-6.457	1.75E-08	ER	doy

Table S5: Model estimates, with "Kenward-Roger" approximation, on linear mixed-effects models constructed with the term "response ~ treatment +DOY+(1 | Block)". Here response is the ecophysiological measure, treatment is a fixed factor variable, DOY is a fixed continuous variable describing the Julian day at sampling, and Block number is included as a random factor variable. For each study species the responses tested were carbon assimilation rate in darkness (A_dr) and photosynthetic rate (A_photo), maximal quantum efficiency of PSII (Fv/Fm), and effective quantum yield of PSII (Yield).

Estimate	Std. Error	df	t value	Pr(> t)	Species	response	coefficients
-2.015	1.227	84.7	-1.642	0.104	<i>Cetraria</i>	A_dr	(Intercept)
0.273	0.238	81.0	1.148	0.254	<i>Cetraria</i>	A_dr	Effect of IE
0.042	0.238	81.0	0.177	0.860	<i>Cetraria</i>	A_dr	Effect of TF
-0.006	0.006	81.0	-0.857	0.394	<i>Cetraria</i>	A_dr	doy
-9.140	1.662	83.8	-5.500	4.03E-07	<i>Cetraria</i>	A_photo	(Intercept)
-0.351	0.324	81.0	-1.084	0.282	<i>Cetraria</i>	A_photo	Effect of IE
0.258	0.324	81.0	0.795	0.429	<i>Cetraria</i>	A_photo	Effect of TF
0.072	0.009	81.0	8.259	2.32E-12	<i>Cetraria</i>	A_photo	doy
0.491	0.081	82.7	6.071	3.70E-08	<i>Cetraria</i>	FvFm	(Intercept)
-0.008	0.016	81.0	-0.508	0.613	<i>Cetraria</i>	FvFm	Effect of IE
-0.005	0.016	81.0	-0.286	0.776	<i>Cetraria</i>	FvFm	Effect of TF
0.001	0.000	81.0	2.040	0.045	<i>Cetraria</i>	FvFm	doy
0.569	0.082	83.1	6.964	7.14E-10	<i>Cetraria</i>	Yield	(Intercept)
-0.023	0.016	81.0	-1.440	0.154	<i>Cetraria</i>	Yield	Effect of IE
-0.022	0.016	81.0	-1.379	0.172	<i>Cetraria</i>	Yield	Effect of TF
0.000	0.000	81.0	1.011	0.315	<i>Cetraria</i>	Yield	doy
-0.733	0.893	84.0	-0.820	0.415	<i>Cladonia</i>	A_dr	(Intercept)
0.310	0.194	81.0	1.598	0.114	<i>Cladonia</i>	A_dr	Effect of IE
0.017	0.194	81.0	0.088	0.930	<i>Cladonia</i>	A_dr	Effect of TF
-0.011	0.005	81.0	-2.213	0.030	<i>Cladonia</i>	A_dr	doy
-10.317	1.372	86.0	-7.522	4.87E-11	<i>Cladonia</i>	A_photo	(Intercept)
-0.628	0.293	81.0	-2.146	0.035	<i>Cladonia</i>	A_photo	Effect of IE
-0.341	0.293	81.0	-1.167	0.247	<i>Cladonia</i>	A_photo	Effect of TF
0.086	0.007	81.0	11.902	1.80E-19	<i>Cladonia</i>	A_photo	doy
-0.082	0.076	84.8	-1.082	0.283	<i>Cladonia</i>	FvFm	(Intercept)
-0.027	0.016	81.0	-1.652	0.102	<i>Cladonia</i>	FvFm	Effect of IE
0.007	0.016	81.0	0.450	0.654	<i>Cladonia</i>	FvFm	Effect of TF
0.003	0.000	81.0	8.136	4.05E-12	<i>Cladonia</i>	FvFm	doy
0.027	0.072	83.8	0.377	0.707	<i>Cladonia</i>	Yield	(Intercept)
-0.021	0.016	81.0	-1.340	0.184	<i>Cladonia</i>	Yield	Effect of IE
0.002	0.016	81.0	0.127	0.899	<i>Cladonia</i>	Yield	Effect of TF
0.003	0.000	81.0	6.736	2.17E-09	<i>Cladonia</i>	Yield	doy
4.267	1.931	79.5	2.209	0.030	<i>Nephromopsis</i>	A_dr	(Intercept)
-6.770	2.731	79.0	-2.479	0.015	<i>Nephromopsis</i>	A_dr	Effect of IE
-4.271	2.731	79.0	-1.564	0.122	<i>Nephromopsis</i>	A_dr	Effect of TF
-0.043	0.011	79.0	-4.054	1.17E-04	<i>Nephromopsis</i>	A_dr	doy

0.038	0.015	79.0	2.583	0.012	<i>Nephromopsis</i>	A_dr	Effect of IE:doy
0.024	0.015	79.0	1.605	0.112	<i>Nephromopsis</i>	A_dr	Effect of TF:doy
-17.181	2.743	81.9	-6.264	1.65E-08	<i>Nephromopsis</i>	A_photo	(Intercept)
8.242	3.842	79.0	2.145	0.035	<i>Nephromopsis</i>	A_photo	Effect of IE
6.151	3.842	79.0	1.601	0.113	<i>Nephromopsis</i>	A_photo	Effect of TF
0.125	0.015	79.0	8.401	1.44E-12	<i>Nephromopsis</i>	A_photo	doy
-0.050	0.021	79.0	-2.396	0.019	<i>Nephromopsis</i>	A_photo	Effect of IE:doy
-0.035	0.021	79.0	-1.688	0.095	<i>Nephromopsis</i>	A_photo	Effect of TF:doy
0.145	0.074	83.0	1.971	0.052	<i>Nephromopsis</i>	FvFm	(Intercept)
-0.003	0.016	81.0	-0.188	0.851	<i>Nephromopsis</i>	FvFm	Effect of IE
-0.005	0.016	81.0	-0.349	0.728	<i>Nephromopsis</i>	FvFm	Effect of TF
0.002	0.000	81.0	5.035	2.83E-06	<i>Nephromopsis</i>	FvFm	doy
0.169	0.069	82.9	2.429	0.017	<i>Nephromopsis</i>	Yield	(Intercept)
-0.008	0.015	81.0	-0.552	0.582	<i>Nephromopsis</i>	Yield	Effect of IE
-0.014	0.015	81.0	-0.945	0.348	<i>Nephromopsis</i>	Yield	Effect of TF
0.002	0.000	81.0	4.862	5.60E-06	<i>Nephromopsis</i>	Yield	doy
1.612	2.527	47.1	0.638	0.527	<i>Polytrichum</i>	A_dr	(Intercept)
0.975	0.378	45.0	2.578	0.013	<i>Polytrichum</i>	A_dr	Effect of IE
1.134	0.378	45.0	3.000	0.004	<i>Polytrichum</i>	A_dr	Effect of TF
-0.042	0.014	45.0	-3.109	0.003	<i>Polytrichum</i>	A_dr	doy
29.452	11.051	45.6	2.665	0.011	<i>Polytrichum</i>	A_photo	(Intercept)
-5.475	1.669	45.0	-3.281	0.002	<i>Polytrichum</i>	A_photo	Effect of IE
-6.035	1.669	45.0	-3.616	0.001	<i>Polytrichum</i>	A_photo	Effect of TF
-0.065	0.060	45.0	-1.080	0.286	<i>Polytrichum</i>	A_photo	doy
0.594	0.085	45.7	6.975	1.03E-08	<i>Polytrichum</i>	FvFm	(Intercept)
-0.033	0.013	45.0	-2.537	0.015	<i>Polytrichum</i>	FvFm	Effect of IE
-0.031	0.013	45.0	-2.438	0.019	<i>Polytrichum</i>	FvFm	Effect of TF
0.001	0.000	45.0	1.678	0.100	<i>Polytrichum</i>	FvFm	doy
0.509	0.080	45.5	6.350	9.04E-08	<i>Polytrichum</i>	Yield	(Intercept)
-0.020	0.012	45.0	-1.654	0.105	<i>Polytrichum</i>	Yield	Effect of IE
-0.034	0.012	45.0	-2.801	0.007	<i>Polytrichum</i>	Yield	Effect of TF
0.001	0.000	45.0	2.564	0.014	<i>Polytrichum</i>	Yield	doy
0.230	6.303	53.6	0.037	0.971	<i>Ptilidium</i>	A_dr	(Intercept)
0.002	1.049	51.2	0.002	0.998	<i>Ptilidium</i>	A_dr	Effect of IE
-0.193	1.049	51.2	-0.184	0.854	<i>Ptilidium</i>	A_dr	Effect of TF
-0.040	0.032	53.0	-1.244	0.219	<i>Ptilidium</i>	A_dr	doy
9.580	7.147	53.6	1.340	0.186	<i>Ptilidium</i>	A_photo	(Intercept)
-0.063	1.189	51.2	-0.053	0.958	<i>Ptilidium</i>	A_photo	Effect of IE
-0.789	1.189	51.2	-0.663	0.510	<i>Ptilidium</i>	A_photo	Effect of TF
-0.005	0.037	53.0	-0.145	0.886	<i>Ptilidium</i>	A_photo	doy
1.010	0.112	53.6	9.051	2.21E-12	<i>Ptilidium</i>	FvFm	(Intercept)
-0.010	0.019	51.2	-0.537	0.594	<i>Ptilidium</i>	FvFm	Effect of IE
-0.035	0.019	51.2	-1.897	0.063	<i>Ptilidium</i>	FvFm	Effect of TF
-0.002	0.001	53.0	-2.970	0.004	<i>Ptilidium</i>	FvFm	doy

0.937	0.105	53.6	8.938	3.34E-12	<i>Ptilidium</i>	Yield	(Intercept)
-0.009	0.017	51.2	-0.512	0.611	<i>Ptilidium</i>	Yield	Effect of IE
-0.025	0.017	51.2	-1.451	0.153	<i>Ptilidium</i>	Yield	Effect of TF
-0.002	0.001	53.0	-2.835	0.006	<i>Ptilidium</i>	Yield	doy
13.133	5.516	20.1	2.381	0.027	<i>Empetrum</i>	A_dr	(Intercept)
-15.786	7.801	20.0	-2.024	0.057	<i>Empetrum</i>	A_dr	Effect of IE
-8.369	7.801	20.0	-1.073	0.296	<i>Empetrum</i>	A_dr	Effect of TF
-0.110	0.029	20.0	-3.766	0.001	<i>Empetrum</i>	A_dr	doy
0.096	0.041	20.0	2.303	0.032	<i>Empetrum</i>	A_dr	Effect of IE:doy
0.053	0.041	20.0	1.283	0.214	<i>Empetrum</i>	A_dr	Effect of TF:doy
-37.431	12.069	20.2	-3.101	0.006	<i>Empetrum</i>	A_photo	(Intercept)
34.795	17.046	20.0	2.041	0.055	<i>Empetrum</i>	A_photo	Effect of IE
40.419	17.046	20.0	2.371	0.028	<i>Empetrum</i>	A_photo	Effect of TF
0.284	0.064	20.0	4.432	2.56E-04	<i>Empetrum</i>	A_photo	doy
-0.210	0.091	20.0	-2.321	0.031	<i>Empetrum</i>	A_photo	Effect of IE:doy
-0.231	0.091	20.0	-2.547	0.019	<i>Empetrum</i>	A_photo	Effect of TF:doy
0.552	0.076	22.3	7.230	2.83E-07	<i>Empetrum</i>	FvFm	(Intercept)
-0.035	0.014	22.0	-2.465	0.022	<i>Empetrum</i>	FvFm	Effect of IE
0.001	0.014	22.0	0.077	0.939	<i>Empetrum</i>	FvFm	Effect of TF
0.001	0.000	22.0	2.894	0.008	<i>Empetrum</i>	FvFm	doy
0.510	0.068	22.3	7.486	1.62E-07	<i>Empetrum</i>	Yield	(Intercept)
-0.032	0.013	22.0	-2.491	0.021	<i>Empetrum</i>	Yield	Effect of IE
0.004	0.013	22.0	0.330	0.744	<i>Empetrum</i>	Yield	Effect of TF
0.001	0.000	22.0	3.690	0.001	<i>Empetrum</i>	Yield	doy

Table S6: Multivariate Analysis of Variance (MANOVA) test statistics for whether the ecophysiological measures R, GPP, FvFm, and Yield were different between lichen species (*Cetraria*, *Cladonia*, *Nephromopsis*) and green plants (*Polytrichum*, *Ptilidium*, *Empetrum*) and among treatments (TF, IE, C). Data were aggregated by species, block and treatment plot (N=105).

	Df	Pillai	approx F	num Df	den Df	Pr(>F)
Lichen_or_plant	1	0.86791	157.7	4	96	< 2e-16
Treatment	2	0.17106	2.268	8	194	0.02434
Lichen_or_plant:Treatment	2	0.12453	1.61	8	194	0.12398
Residuals	99					
Response: Respiration	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
Lichen_or_plant	1	328.06	328.06	254.1192	<2e-16	***
Treatment	2	6.11	3.06	2.3665	0.09909	.
Lichen_or_plant:Treatment	2	2.75	1.38	1.0654	0.34849	
Residuals	99	127.81	1.29			
Response: GPP	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
Lichen_or_plant	1	1216.56	1216.56	177.0468	<2e-16	***
Treatment	2	74.87	37.44	5.4482	0.005692	**
Lichen_or_plant:Treatment	2	49.27	24.64	3.5853	0.031386	*
Residuals	99	680.27	6.87			
Response: FvFm	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
Lichen_or_plant	1	0.56036	0.56036	134.0844	<2e-16	***
Treatment	2	0.00677	0.00338	0.8095	0.448	
Lichen_or_plant:Treatment	2	0.00031	0.00016	0.0376	0.9631	
Residuals	99	0.41374	0.00418			

Response: Yield	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
Lichen_or_plant	1	0.61555	0.61555	161.2588	<2e-16	***
Treatment	2	0.00631	0.00315	0.8261	0.4407	
Lichen_or_plant:Treatment	2	0.00218	0.00109	0.2851	0.7526	
Residuals	99	0.3779	0.00382			