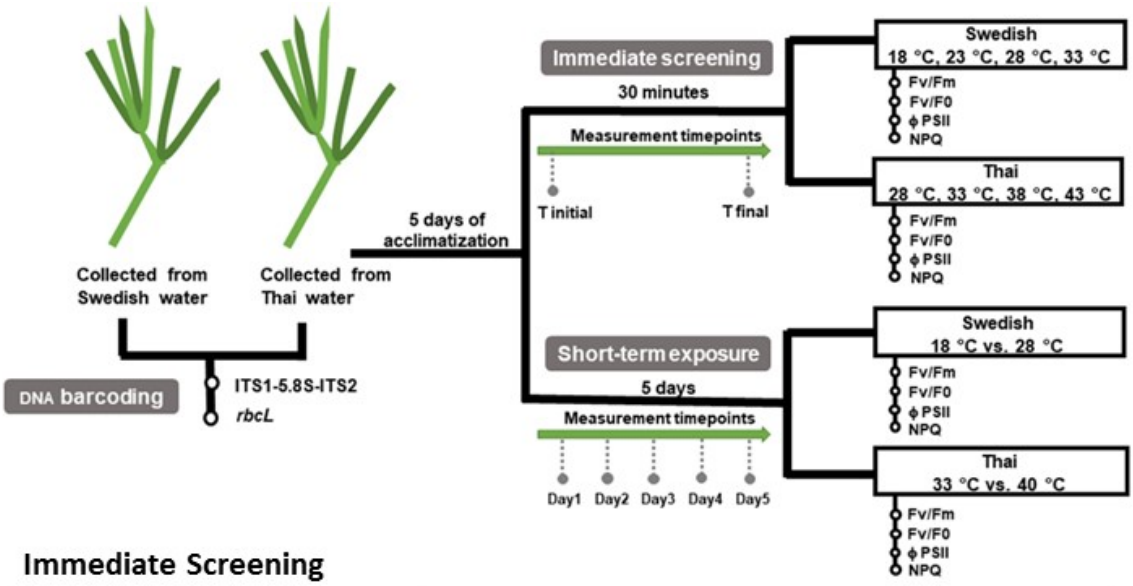


Immediate Screening

Treatments		Timeline: 15 min Dark adaptation → 20 min Light (100 µE Swedish set-up) (200 µE Thai set-up) → 15 min Dark adaptation		
Swedish set-up (salinity =25) (pH =8.1)	**Thai set-up (salinity =30) (pH =8.1)**	**Measured parameters**		
18 °C (ambient)	28 °C (ambient)	F_v/F_m, F_v/F_0	ϕPSII, NPQ	F_v/F_m, F_v/F_0
23 °C (ambient+5°C)	33 °C (ambient+5°C)	F_v/F_m, F_v/F_0	ϕPSII, NPQ	F_v/F_m, F_v/F_0
28 °C (ambient+10°C)	38 °C (ambient+10°C)	F_v/F_m, F_v/F_0	ϕPSII, NPQ	Fv/Fm, Fv/F0
33 °C (ambient+15°C)	43 °C (ambient+15°C)	F_v/F_m, F_v/F_0	ϕPSII, NPQ	F_v/F_m, F_v/F_0

Short term exposure

Treatments		Timeline: Day0 Day1 Day2 Day3 Day4 Day5; Measurements were done daily at the end of light period; 12 hrs light period (100 µE Swedish set-up) (200 µE Thai set-up) 12 hrs dark period	
Swedish set-up (salinity =25) (initial pH =8.1)	18 °C (control)	ϕPSII, NPQ	F_v/F_m, F_v/F_0
	28 °C	ϕPSII, NPQ	F_v/F_m, F_v/F_0
Thai set-up (salinity =30) (initial pH =8.1)	33 °C (control)	ϕPSII, NPQ	F_v/F_m, F_v/F_0
	40 °C	ϕPSII, NPQ	F_v/F_m, F_v/F_0

Figure S1. Experimental design and timeline of the measurements.

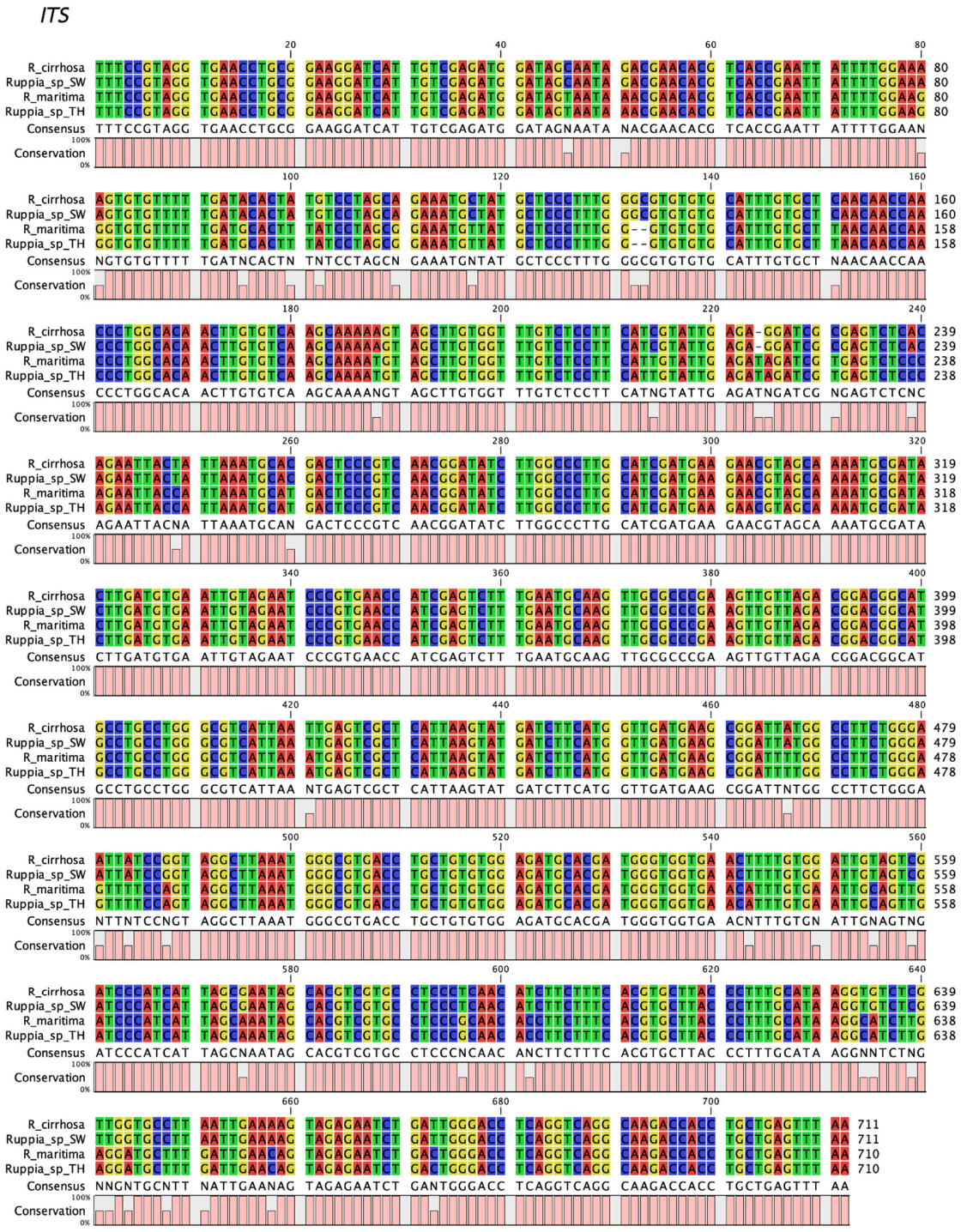


Figure S2. The multiple sequence alignment result of ITS gene sequences of the Ruppia cirrhosa from Sweden (Ruppia_sp_SW) and R. maritima from Thailand (Ruppia_sp_TH) with the reference strains; R. maritima (Accession No. AB728734.1) and R. cirrhosa (Accession No. AB728749.1) using MUSCLE (MUltiple Sequence Comparison by Log Expectation).

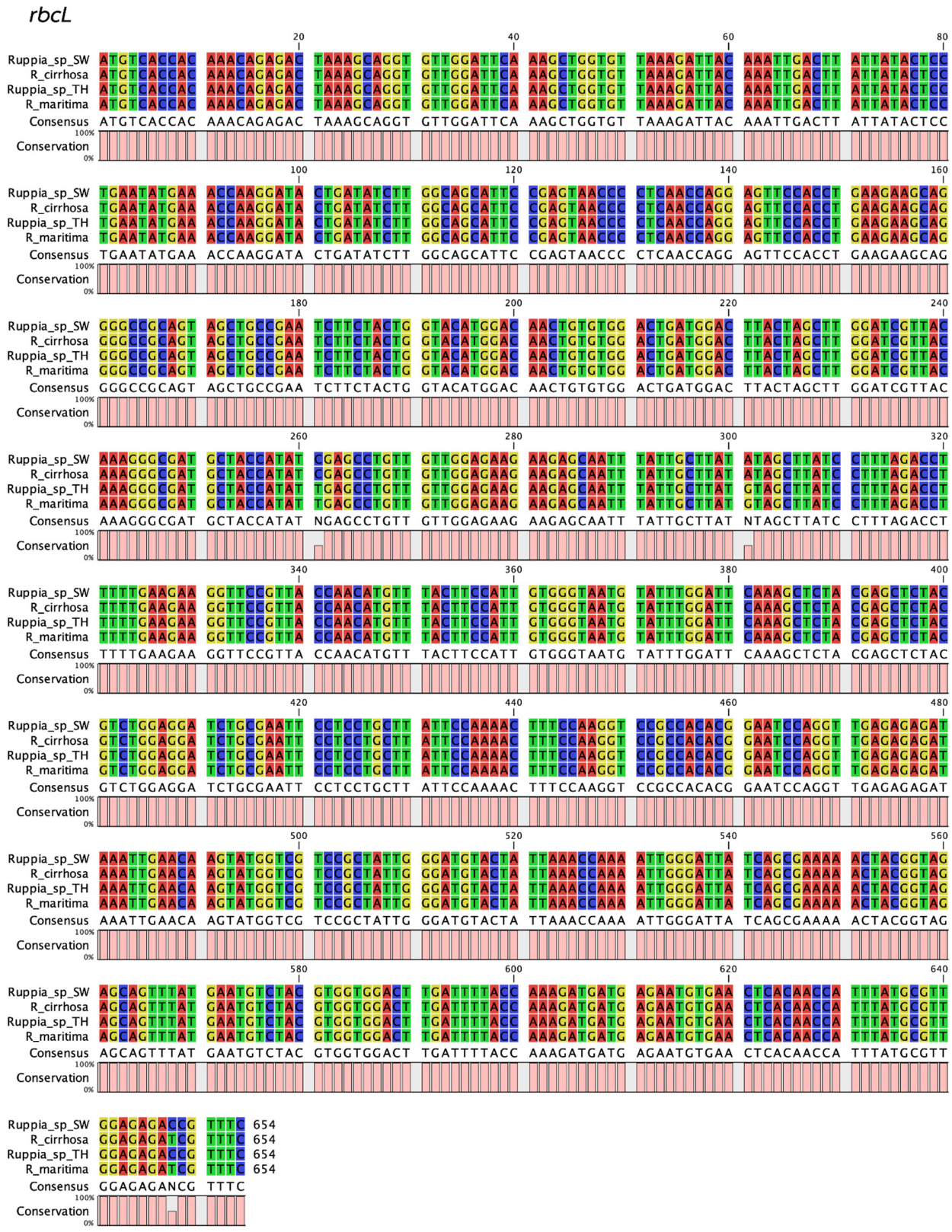


Figure S3. The multiple sequence alignment result of rbcL gene sequences of the R. cirrhosa from Sweden (Ruppia_sp_SW) and R. maritima from Thailand (Ruppia_sp_TH) with the reference strains; R. maritima (Accession No.JN113279.1) and R. cirrhosa (Accession No. JN113277.1) using MUSCLE (MUltiple Sequence Comparison by Log Expectation).

Table S1. Summary of different ANOVAs of four photosynthetic parameters in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to a series of temperatures1Significant values ($p < 0.05$) are shown in bold.

Effect	SS	Degree of Freedom	MS	F	p
F_v/F_m (Repeated ANOVA)					
Species	0.250	1	0.250	126.70	**<0.001**
Temperature	0.168	3	0.056	28.35	**<0.001**
Species x Temperature	0.063	3	0.021	10.59	**<0.001**
Error	0.134	68	0.002		
Time	0.095	1	0.095	128.13	**<0.001**
Time x Species	0.053	1	0.070	94.30	**<0.001**
Time x Temperature	0.070	3	0.018	23.99	**<0.001**
Time x Temperature x Species	0.057	3	0.019	25.60	**<0.001**
Error	0.050	68	0.001		
F_v/F_0 (Repeated ANOVA)					
Species	27.515	1	27.515	81.21	**<0.001**
Temperature	5.591	3	5.591	16.50	**<0.001**
Species x Temperature	0.612	3	0.612	1.81	0.154
Error	0.339	68	0.339		
Time	5.656	1	5.656	38.84	**<0.001**
Time x Species	3.544	1	3.544	24.34	**<0.001**
Time x Temperature	0.648	3	0.648	4.45	**<0.01**
Time x Temperature x Species	0.691	3	0.691	4.75	**<0.01**
Error	0.146	68	0.146		
***ϕPSII (Two-Way ANOVA)*#**					
Intercept	22.816	1	22.816	3404.84	**<0.001**
Species	0.470	1	0.470	70.13	**<0.001**
Temperature	0.292	3	0.097	14.52	**<0.001**
Species x Temperature	0.286	3	0.095	14.21	**<0.001**
Error	0.456	68	0.007		
NPQ (Two-Way ANOVA)					
Species	22.240	1	22.241	28.20	**<0.001**
Temperature	3.801	3	1.267	1.61	0.196
Species x Temperature	3.258	3	1.086	1.38	0.257
Error	53.632	68	0.789		

Table S2. Summary of The Fisher's least significant difference (LSD) test of the maximum quantum yield (F_v/F_m) in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to a series of temperatures1Significant values ($p < 0.05$) are shown in red.

Cell No.	LSD test; variable Fv/Fm Probabilities for Post Hoc Tests Error: Between; Within; Pooled MS = .00136, df = 112.75																		
	Species	Temperature Increase	TIME	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}	{9}	{10}	{11}	{12}	{13}	{14}	{15}	{16}
1	*R. cirrhosa*	0	initial		0.529	0.798	0.985	0.379	0.115	0.089	0.054	0.383	0.000	0.034	0.002	0.000	0.000	0.000	0.000
2	*R. cirrhosa*	0	final	0.529		0.471	0.628	0.678	0.265	0.215	0.142	0.692	0.000	0.099	0.007	0.000	0.000	0.000	0.000
3	*R. cirrhosa*	5	initial	0.798	0.471		0.750	0.257	0.068	0.051	0.030	0.257	0.000	0.018	0.001	0.000	0.000	0.000	0.000
4	*R. cirrhosa*	5	final	0.985	0.628	0.750		0.369	0.111	0.086	0.052	0.372	0.000	0.033	0.001	0.000	0.000	0.000	0.000
5	*R. cirrhosa*	10	initial	0.379	0.678	0.257	0.369		0.344	0.407	0.290	0.976	0.000	0.219	0.021	0.001	0.000	0.002	0.000
6	*R. cirrhosa*	10	final	0.115	0.265	0.068	0.111	0.344		0.898	0.721	0.454	0.000	0.609	0.110	0.009	0.000	0.013	0.000
7	*R. cirrhosa*	15	initial	0.089	0.215	0.051	0.086	0.407	0.898		0.756	0.379	0.000	0.704	0.141	0.013	0.000	0.018	0.000
8	*R. cirrhosa*	15	final	0.054	0.142	0.030	0.052	0.290	0.721	0.756		0.265	0.001	0.885	0.216	0.024	0.000	0.033	0.000
9	*R. maritima*	0	initial	0.383	0.692	0.257	0.372	0.976	0.454	0.379	0.265		0.000	0.196	0.017	0.001	0.000	0.001	0.000
10	*R. maritima*	0	final	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000		0.001	0.024	0.225	0.033	0.177	0.000
11	*R. maritima*	5	initial	0.034	0.099	0.018	0.033	0.219	0.609	0.704	0.885	0.196	0.001		0.131	0.030	0.000	0.041	0.000
12	*R. maritima*	5	final	0.002	0.007	0.001	0.001	0.021	0.110	0.141	0.216	0.017	0.024	0.131		0.285	0.000	0.352	0.000
13	*R. maritima*	10	initial	0.000	0.000	0.000	0.000	0.001	0.009	0.013	0.024	0.001	0.225	0.030	0.285		0.000	0.889	0.000
14	*R. maritima*	10	final	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.033	0.000	0.000	0.000		0.001	0.000
15	*R. maritima*	15	initial	0.000	0.000	0.000	0.000	0.002	0.013	0.018	0.033	0.001	0.177	0.041	0.352	0.889	0.001		0.000
16	*R. maritima*	15	final	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			#																

Table S3. Summary of The Fisher's least significant difference (LSD) test of the PSII potential activity (F_v/F_0) in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to a series of temperatures1Significant values ($p < 0.05$) are shown in red.

Cell No.	LSD test; variable Fv/F0 Probabilities for Post Hoc Tests Error: Between; Within; Pooled MS = .24222, df = 117.34																	
	Species	Temperature Increase	TIME	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}	{9}	{10}	{11}	{12}	{13}	{14}	{15}	{16}
1	*R. cirrhosa*	0	initial		0.374	0.779	0.957	0.106	0.047	0.029	0.023	0.075	0.000	0.017	0.006	0.000	0.000	0.000	0.000
2	*R. cirrhosa*	0	final	0.374		0.331	0.456	0.351	0.190	0.131	0.111	0.280	0.000	0.089	0.037	0.000	0.000	0.000	0.000
3	*R. cirrhosa*	5	initial	0.779	0.331		0.770	0.058	0.024	0.014	0.011	0.039	0.000	0.008	0.002	0.000	0.000	0.000	0.000
4	*R. cirrhosa*	5	final	0.957	0.456	0.770		0.095	0.041	0.025	0.020	0.067	0.000	0.014	0.005	0.000	0.000	0.000	0.000
5	*R. cirrhosa*	10	initial	0.106	0.351	0.058	0.095		0.624	0.560	0.504	0.901	0.000	0.452	0.253	0.008	0.000	0.003	0.000
6	*R. cirrhosa*	10	final	0.047	0.190	0.024	0.041	0.624		0.839	0.774	0.790	0.001	0.717	0.450	0.022	0.000	0.009	0.000
7	*R. cirrhosa*	15	initial	0.029	0.131	0.014	0.025	0.560	0.839		0.913	0.635	0.002	0.877	0.584	0.037	0.000	0.016	0.000
8	*R. cirrhosa*	15	final	0.023	0.111	0.011	0.020	0.504	0.774	0.913		0.575	0.003	0.946	0.645	0.046	0.000	0.020	0.000
9	*R. maritima*	0	initial	0.075	0.280	0.039	0.067	0.901	0.790	0.635	0.575		0.000	0.519	0.295	0.009	0.000	0.003	0.000
10	*R. maritima*	0	final	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.003	0.000		0.002	0.008	0.279	0.216	0.461	0.000
11	*R. maritima*	5	initial	0.017	0.089	0.008	0.014	0.452	0.717	0.877	0.946	0.519	0.002		0.603	0.047	0.000	0.020	0.000
12	*R. maritima*	5	final	0.006	0.037	0.002	0.005	0.253	0.450	0.584	0.645	0.295	0.008	0.603		0.112	0.000	0.054	0.000
13	*R. maritima*	10	initial	0.000	0.000	0.000	0.000	0.008	0.022	0.037	0.046	0.009	0.279	0.047	0.112		0.004	0.728	0.000
14	*R. maritima*	10	final	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.216	0.000	0.000	0.004		0.050	0.000
15	*R. maritima*	15	initial	0.000	0.000	0.000	0.000	0.003	0.009	0.016	0.020	0.003	0.461	0.020	0.054	0.728	0.050		0.000
16	*R. maritima*	15	final	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Table S4. Summary of The Fisher's least significant difference (LSD) test of the effective quantum yield (ϕPSII) in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to a series of temperatures1Significant values ($p < 0.05$) are shown in red.

#

Cell No.	LSD test; variable ϕPSII Probabilities for Post Hoc Tests Error: Between MS = .00670, df = 68.000									
	Species	Temperature Increase	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}
1	*R. cirrhosa*	0		0.150	0.242	0.187	0.001	0.274	0.834	0.000
2	*R. cirrhosa*	5	0.150		0.783	0.902	0.000	0.011	0.203	0.000
3	*R. cirrhosa*	10	0.242	0.783		0.879	0.000	0.024	0.320	0.000
4	*R. cirrhosa*	15	0.187	0.902	0.879		0.000	0.016	0.251	0.000
5	*R. maritima*	0	0.001	0.000	0.000	0.000		0.015	0.000	0.000
6	*R. maritima*	5	0.274	0.011	0.024	0.016	0.015		0.182	0.000
7	*R. maritima*	10	0.834	0.203	0.320	0.251	0.000	0.182		0.000
8	*R. maritima*	15	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Table S5. Summary of The Fisher's least significant difference (LSD) test of the non-photochemical quenching (NPQ) in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to a series of temperatures1Significant values ($p < 0.05$) are shown in red.

Cell No.	LSD test; variable NPQ Probabilities for Post Hoc Tests Error: Between MS = .78870, df = 68.000									
	Species	Temperature Increase	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}
1	*R. cirrhosa*	0		0.989	0.907	0.787	0.001	0.035	0.175	0.000
2	*R. cirrhosa*	5	0.989		0.918	0.797	0.001	0.037	0.180	0.000
3	*R. cirrhosa*	10	0.907	0.918		0.878	0.001	0.047	0.216	0.000
4	*R. cirrhosa*	15	0.787	0.797	0.878		0.002	0.066	0.279	0.000
5	*R. maritima*	0	0.001	0.001	0.001	0.002		0.167	0.031	0.609
6	*R. maritima*	5	0.035	0.037	0.047	0.066	0.167		0.427	0.060
7	*R. maritima*	10	0.175	0.180	0.216	0.279	0.031	0.427		0.008
8	*R. maritima*	15	0.000	0.000	0.000	0.000	0.609	0.060	0.008	

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Table S6. Summary of repeated-measures ANOVAs of four photosynthetic parameters in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to prolonged warming treatments. Significant values ($p < 0.05$) are shown in bold.

Effect	SS	Degr. of freedom	MS	F	p
F_v/F_m					
Species	1.516	1	1.516	324.95	**<0.001**
Treatment#	0.963	1	0.963	206.46	**<0.001**
Species x Treatment	0.730	1	0.730	156.40	**<0.001**
Error	0.093	20	0.005		
Day	0.575	4	0.144	40.07	**<0.001**
Day x Species	0.487	4	0.122	33.96	**<0.001**
Day x Treatment	0.376	4	0.094	26.20	**<0.001**
Day x Species x	0.257	4	0.064	17.96	**<0.001**
Treatment	0.287	80	0.004		
Error					
F_v/F_0					
Species	57.469	1	57.469	287.59	**<0.001**
Treatment	27.813	1	27.81	139.19	**<0.001**
Species x Treatment	11.564	1	11.56	57.87	**<0.001**
Error	3.996	20	0.200		
Day	17.638	4	4.409	26.19	**<0.001**
Day x Species	15.663	4	3.916	23.25	**<0.001**
Day x Treatment	7.627	4	1.907	11.32	**<0.001**
Day x Species x	3.490	4	0.872	5.18	**<0.001**
Treatment	13.471	80	0.168#		
Error					
$\phi PSII$					
Species	0.724	1	0.724	115.88	**<0.001**
Treatment	0.871	1	0.871	139.47	**<0.001**
Species x Treatment	0.935	1	0.935	149.65	**<0.001**
Error	0.125	20	0.006		
Day	0.149	4	0.037	5.67	**<0.001**
Day x Species	0.304	4	0.076	11.54	**<0.001**
Day x Treatment	0.281	4	0.070	10.68	**<0.001**
Day x Species x	0.167	4	0.042	6.35	**<0.001**
Treatment	0.527	80	0.007		
Error					
NPQ					
Species	11.932	1	11.932	22.15	**<0.001**
Treatment	2.780	1	2.780	5.16	**<0.05**
Species x Treatment	2.946	1	2.946	5.48	**<0.05**
Error	10.776	20	0.539		
Day	5.443	4	1.361	3.74	**<0.01**
Day x Species	5.117	4	1.279	3.51	**<0.05**
Day x Treatment	4.150	4	1.038	2.85	**<0.05**
Day x Species x	3.490	4	0.872	2.40	0.057
Treatment	29.121	80	0.364		
Error					

Table S7. Summary of The Fisher's least significant difference (LSD) test of the maximum quantum yield (F_v/F_m) in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to prolonged warming treatment1Significant values ($p < 0.05$) are shown in red.

Cell No.	LSD test; variable Fv/Fm Probabilities for Post Hoc Tests Error: Between; Within; Pooled MS = .00380, df = 98.720																					
	Species	Treatment	DAY	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}	{9}	{10}	{11}	{12}	{13}	{14}	{15}	{16}	{17}	{18}	{19}	{20}
1	*R. cirrhosa*	Control	Day1		0.754	0.722	0.715	0.758	0.955	0.939	0.740	0.802	0.179	0.926	0.003	0.864	0.007	0.013	0.274	0.000	0.000	0.000	0.000
2	*R. cirrhosa*	Control	Day2	0.754		0.966	0.959	0.995	0.804	0.703	0.525	0.579	0.101	0.833	0.001	0.634	0.003	0.006	0.163	0.000	0.000	0.000	0.000
3	*R. cirrhosa*	Control	Day3	0.722	0.966		0.992	0.962	0.772	0.673	0.499	0.552	0.093	0.801	0.001	0.605	0.003	0.005	0.151	0.000	0.000	0.000	0.000
4	*R. cirrhosa*	Control	Day4	0.715	0.959	0.992		0.954	0.765	0.666	0.493	0.545	0.091	0.794	0.001	0.599	0.003	0.005	0.149	0.000	0.000	0.000	0.000
5	*R. cirrhosa*	Control	Day5	0.758	0.995	0.962	0.954		0.808	0.707	0.529	0.583	0.102	0.837	0.001	0.638	0.003	0.006	0.165	0.000	0.000	0.000	0.000
6	*R. cirrhosa*	Warm	Day1	0.955	0.804	0.772	0.765	0.808		0.891	0.690	0.753	0.151	0.970	0.003	0.820	0.006	0.011	0.250	0.000	0.000	0.000	0.000
7	*R. cirrhosa*	Warm	Day2	0.939	0.703	0.673	0.666	0.707	0.891		0.793	0.858	0.193	0.865	0.004	0.924	0.009	0.016	0.309	0.000	0.000	0.000	0.000
8	*R. cirrhosa*	Warm	Day3	0.740	0.525	0.499	0.493	0.529	0.690	0.793		0.933	0.297	0.671	0.008	0.873	0.018	0.031	0.444	0.000	0.000	0.000	0.000
9	*R. cirrhosa*	Warm	Day4	0.802	0.579	0.552	0.545	0.583	0.753	0.858	0.933		0.260	0.731	0.007	0.937	0.014	0.025	0.398	0.000	0.000	0.000	0.000
10	*R. cirrhosa*	Warm	Day5	0.179	0.101	0.093	0.091	0.102	0.151	0.193	0.297	0.260		0.151	0.098	0.241	0.168	0.245	0.802	0.000	0.000	0.000	0.000
11	*R. maritima*	Control	Day1	0.926	0.833	0.801	0.794	0.837	0.970	0.865	0.671	0.731	0.151		0.002	0.785	0.005	0.009	0.235	0.000	0.000	0.000	0.000
12	*R. maritima*	Control	Day2	0.003	0.001	0.001	0.001	0.001	0.003	0.004	0.008	0.007	0.098	0.002		0.004	0.770	0.605	0.057	0.000	0.000	0.000	0.000
13	*R. maritima*	Control	Day3	0.864	0.634	0.605	0.599	0.638	0.820	0.924	0.873	0.937	0.241	0.785	0.004		0.010	0.018	0.356	0.000	0.000	0.000	0.000
14	*R. maritima*	Control	Day4	0.007	0.003	0.003	0.003	0.003	0.006	0.009	0.018	0.014	0.168	0.005	0.770	0.010		0.822	0.104	0.000	0.000	0.000	0.000
15	*R. maritima*	Control	Day5	0.013	0.006	0.005	0.005	0.006	0.011	0.016	0.031	0.025	0.245	0.009	0.605	0.018	0.822		0.159	0.000	0.000	0.000	0.000
16	*R. maritima*	Warm	Day1	0.274	0.163	0.151	0.149	0.165	0.250	0.309	0.444	0.398	0.802	0.235	0.057	0.356	0.104	0.159		0.000	0.000	0.000	0.000
17	*R. maritima*	Warm	Day2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.255	0.000	0.000
18	*R. maritima*	Warm	Day3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.255		0.000	0.000
19	*R. maritima*	Warm	Day4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
20	*R. maritima*	Warm	Day5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Table S8. Summary of The Fisher's least significant difference (LSD) test of the PSII potential activity (F_v/F_0) in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to prolonged warming treatment1Significant values ($p < 0.05$) are shown in red.

Cell No.	LSD test; variable Fv/F0 Probabilities for Post Hoc Tests Error: Between; Within; Pooled MS = .17468, df = 99.484																					
	Species	Treatment	DAY	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}	{9}	{10}	{11}	{12}	{13}	{14}	{15}	{16}	{17}	{18}	{19}	{20}
1	*R. cirrhosa*	Control	Day1		0.368	0.284	0.290	0.346	0.922	0.894	0.538	0.638	0.023	0.617	0.000	0.014	0.000	0.000	0.055	0.000	0.000	0.000	0.000
2	*R. cirrhosa*	Control	Day2	0.368		0.863	0.874	0.967	0.431	0.451	0.135	0.177	0.002	0.699	0.000	0.108	0.000	0.000	0.006	0.000	0.000	0.000	0.000
3	*R. cirrhosa*	Control	Day3	0.284	0.863		0.989	0.896	0.339	0.357	0.097	0.129	0.001	0.579	0.000	0.150	0.000	0.000	0.003	0.000	0.000	0.000	0.000
4	*R. cirrhosa*	Control	Day4	0.290	0.874	0.989		0.907	0.346	0.364	0.099	0.132	0.001	0.588	0.000	0.146	0.000	0.000	0.004	0.000	0.000	0.000	0.000
5	*R. cirrhosa*	Control	Day5	0.346	0.967	0.896	0.907		0.408	0.427	0.125	0.164	0.002	0.670	0.000	0.117	0.000	0.000	0.005	0.000	0.000	0.000	0.000
6	*R. cirrhosa*	Warm	Day1	0.922	0.431	0.339	0.346	0.408		0.972	0.467	0.563	0.017	0.687	0.000	0.018	0.000	0.000	0.044	0.000	0.000	0.000	0.000
7	*R. cirrhosa*	Warm	Day2	0.894	0.451	0.357	0.364	0.427	0.972		0.446	0.540	0.015	0.713	0.000	0.019	0.000	0.000	0.041	0.000	0.000	0.000	0.000
8	*R. cirrhosa*	Warm	Day3	0.538	0.135	0.097	0.099	0.125	0.467	0.446		0.881	0.090	0.265	0.000	0.002	0.000	0.000	0.190	0.000	0.000	0.000	0.000
9	*R. cirrhosa*	Warm	Day4	0.638	0.177	0.129	0.132	0.164	0.563	0.540	0.881		0.066	0.333	0.000	0.004	0.000	0.000	0.146	0.000	0.000	0.000	0.000
10	*R. cirrhosa*	Warm	Day5	0.023	0.002	0.001	0.001	0.002	0.017	0.015	0.090	0.066		0.006	0.008	0.000	0.007	0.013	0.715	0.000	0.000	0.000	0.000
11	*R. maritima*	Control	Day1	0.617	0.699	0.579	0.588	0.670	0.687	0.713	0.265	0.333	0.006		0.000	0.044	0.000	0.000	0.016	0.000	0.000	0.000	0.000
12	*R. maritima*	Control	Day2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000		0.000	0.965	0.842	0.003	0.000	0.000	0.000	0.000
13	*R. maritima*	Control	Day3	0.014	0.108	0.150	0.146	0.117	0.018	0.019	0.002	0.004	0.000	0.044	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
14	*R. maritima*	Control	Day4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.965	0.000		0.808	0.002	0.000	0.000	0.000	0.000
15	*R. maritima*	Control	Day5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.842	0.000	0.808		0.005	0.000	0.000	0.000	0.000
16	*R. maritima*	Warm	Day1	0.055	0.006	0.003	0.004	0.005	0.044	0.041	0.190	0.146	0.715	0.016	0.003	0.000	0.002	0.005		0.000	0.000	0.000	0.000
17	*R. maritima*	Warm	Day2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.439	0.011	0.000
18	*R. maritima*	Warm	Day3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.439		0.073	0.003
19	*R. maritima*	Warm	Day4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.073		0.213
20	*R. maritima*	Warm	Day5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.213	

Table S9. Summary of The Fisher's least significant difference (LSD) test of the effective quantum yield (ϕPSII) in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to prolonged warming treatment1Significant values ($p < 0.05$) are shown in red.

Cell No.	LSD test; variable ϕPSII Probabilities for Post Hoc Tests Error: Between; Within; Pooled MS = .00652, df = 99.957																					
	Species	Treatment	DAY	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}	{9}	{10}	{11}	{12}	{13}	{14}	{15}	{16}	{17}	{18}	{19}	{20}
1	*R. cirrhosa*	Control	Day1		0.098	0.635	0.058	0.041	0.269	0.347	0.130	0.009	0.546	0.245	0.050	0.018	0.066	0.304	0.884	0.000	0.000	0.000	0.000
2	*R. cirrhosa*	Control	Day2	0.098		0.234	0.805	0.691	0.569	0.462	0.876	0.339	0.284	0.608	0.767	0.467	0.864	0.517	0.070	0.000	0.000	0.000	0.000
3	*R. cirrhosa*	Control	Day3	0.635	0.234		0.152	0.114	0.528	0.642	0.297	0.033	0.899	0.492	0.136	0.056	0.172	0.581	0.533	0.000	0.000	0.000	0.000
4	*R. cirrhosa*	Control	Day4	0.058	0.805	0.152		0.880	0.414	0.326	0.686	0.478	0.188	0.447	0.961	0.631	0.939	0.371	0.040	0.000	0.000	0.000	0.000
5	*R. cirrhosa*	Control	Day5	0.041	0.691	0.114	0.880		0.333	0.257	0.578	0.577	0.142	0.362	0.918	0.743	0.819	0.296	0.028	0.000	0.000	0.000	0.000
6	*R. cirrhosa*	Warm	Day1	0.269	0.569	0.528	0.414	0.333		0.869	0.681	0.131	0.616	0.954	0.387	0.196	0.459	0.937	0.211	0.000	0.000	0.000	0.000
7	*R. cirrhosa*	Warm	Day2	0.347	0.462	0.642	0.326	0.257	0.869		0.565	0.095	0.737	0.823	0.303	0.145	0.365	0.930	0.277	0.000	0.000	0.000	0.000
8	*R. cirrhosa*	Warm	Day3	0.130	0.876	0.297	0.686	0.578	0.681	0.565		0.269	0.363	0.721	0.651	0.377	0.743	0.623	0.097	0.000	0.000	0.000	0.000
9	*R. cirrhosa*	Warm	Day4	0.009	0.339	0.033	0.478	0.577	0.131	0.095	0.269		0.046	0.143	0.508	0.818	0.432	0.110	0.006	0.000	0.000	0.000	0.000
10	*R. cirrhosa*	Warm	Day5	0.546	0.284	0.899	0.188	0.142	0.616	0.737	0.363	0.046		0.575	0.172	0.074	0.214	0.670	0.453	0.000	0.000	0.000	0.000
11	*R. maritima*	Control	Day1	0.245	0.608	0.492	0.447	0.362	0.954	0.823	0.721	0.143	0.575		0.422	0.219	0.497	0.893	0.191	0.000	0.000	0.000	0.000
12	*R. maritima*	Control	Day2	0.050	0.767	0.136	0.961	0.918	0.387	0.303	0.651	0.508	0.172	0.422		0.668	0.901	0.349	0.036	0.000	0.000	0.000	0.000
13	*R. maritima*	Control	Day3	0.018	0.467	0.056	0.631	0.743	0.196	0.145	0.377	0.818	0.074	0.219	0.668		0.580	0.174	0.012	0.000	0.000	0.000	0.000
14	*R. maritima*	Control	Day4	0.066	0.864	0.172	0.939	0.819	0.459	0.365	0.743	0.432	0.214	0.497	0.901	0.580		0.416	0.048	0.000	0.000	0.000	0.000
15	*R. maritima*	Control	Day5	0.304	0.517	0.581	0.371	0.296	0.937	0.930	0.623	0.110	0.670	0.893	0.349	0.174	0.416		0.241	0.000	0.000	0.000	0.000
16	*R. maritima*	Warm	Day1	0.884	0.070	0.533	0.040	0.028	0.211	0.277	0.097	0.006	0.453	0.191	0.036	0.012	0.048	0.241		0.000	0.000	0.000	0.000
17	*R. maritima*	Warm	Day2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.019	0.000	0.000
18	*R. maritima*	Warm	Day3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019		0.144	0.000
19	*R. maritima*	Warm	Day4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.144		0.010
20	*R. maritima*	Warm	Day5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	

Table S10. Summary of The Fisher's least significant difference (LSD) test of the non-photochemical quenching (NPQ) in *Ruppia cirrhosa* (Swedish) and *R. maritima* (Thailand) in responses to prolonged warming treatment1Significant values ($p < 0.05$) are shown in red.

Cell No.	LSD test; variable NPQ Probabilities for Post Hoc Tests Error: Between; Within; Pooled MS = .39897, df = 97.021																					
	Species	Treatment	DAY	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}	{9}	{10}	{11}	{12}	{13}	{14}	{15}	{16}	{17}	{18}	{19}	{20}
1	*R. cirrhosa*	Control	Day1		0.842	0.910	0.823	0.856	0.974	0.987	0.869	0.669	0.867	0.905	0.526	0.152	0.147	0.813	0.044	0.000	0.000	0.441	0.842
2	*R. cirrhosa*	Control	Day2	0.842		0.931	0.980	0.986	0.875	0.862	0.980	0.813	0.981	0.943	0.410	0.105	0.101	0.669	0.028	0.000	0.000	0.338	0.993
3	*R. cirrhosa*	Control	Day3	0.910	0.931		0.912	0.945	0.940	0.927	0.954	0.749	0.953	0.991	0.458	0.124	0.119	0.731	0.034	0.000	0.000	0.380	0.928
4	*R. cirrhosa*	Control	Day4	0.823	0.980	0.912		0.967	0.856	0.843	0.961	0.831	0.963	0.924	0.397	0.100	0.097	0.653	0.026	0.000	0.000	0.326	0.988
5	*R. cirrhosa*	Control	Day5	0.856	0.986	0.945	0.967		0.888	0.875	0.993	0.800	0.994	0.956	0.419	0.109	0.105	0.682	0.029	0.000	0.000	0.346	0.980
6	*R. cirrhosa*	Warm	Day1	0.974	0.875	0.940	0.856	0.888		0.986	0.889	0.680	0.888	0.931	0.505	0.143	0.138	0.788	0.040	0.000	0.000	0.422	0.868
7	*R. cirrhosa*	Warm	Day2	0.987	0.862	0.927	0.843	0.875	0.986		0.876	0.667	0.875	0.918	0.515	0.147	0.142	0.801	0.042	0.000	0.000	0.432	0.855
8	*R. cirrhosa*	Warm	Day3	0.869	0.980	0.954	0.961	0.993	0.889	0.876		0.784	0.999	0.963	0.424	0.111	0.107	0.688	0.029	0.000	0.000	0.350	0.973
9	*R. cirrhosa*	Warm	Day4	0.669	0.813	0.749	0.831	0.800	0.680	0.667	0.784		0.785	0.758	0.289	0.064	0.062	0.507	0.015	0.000	0.000	0.232	0.819
10	*R. cirrhosa*	Warm	Day5	0.867	0.981	0.953	0.963	0.994	0.888	0.875	0.999	0.785		0.962	0.423	0.110	0.106	0.687	0.029	0.000	0.000	0.349	0.975
11	*R. maritima*	Control	Day1	0.905	0.943	0.991	0.924	0.956	0.931	0.918	0.963	0.758	0.962		0.431	0.106	0.102	0.710	0.033	0.000	0.000	0.375	0.936
12	*R. maritima*	Control	Day2	0.526	0.410	0.458	0.397	0.419	0.505	0.515	0.424	0.289	0.423	0.431		0.400	0.390	0.677	0.163	0.000	0.000	0.892	0.405
13	*R. maritima*	Control	Day3	0.152	0.105	0.124	0.100	0.109	0.143	0.147	0.111	0.064	0.110	0.106	0.400		0.985	0.210	0.550	0.001	0.002	0.503	0.103
14	*R. maritima*	Control	Day4	0.147	0.101	0.119	0.097	0.105	0.138	0.142	0.107	0.062	0.106	0.102	0.390	0.985		0.203	0.562	0.001	0.002	0.492	0.100
15	*R. maritima*	Control	Day5	0.813	0.669	0.731	0.653	0.682	0.788	0.801	0.688	0.507	0.687	0.710	0.677	0.210	0.203		0.074	0.000	0.000	0.593	0.663
16	*R. maritima*	Warm	Day1	0.044	0.028	0.034	0.026	0.029	0.040	0.042	0.029	0.015	0.029	0.033	0.163	0.550	0.562	0.074		0.005	0.007	0.187	0.021
17	*R. maritima*	Warm	Day2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.005		0.882	0.000	0.000
18	*R. maritima*	Warm	Day3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.007	0.882		0.000	0.000
19	*R. maritima*	Warm	Day4	0.441	0.338	0.380	0.326	0.346	0.422	0.432	0.350	0.232	0.349	0.375	0.892	0.503	0.492	0.593	0.187	0.000	0.000		0.312
20	*R. maritima*	Warm	Day5	0.842	0.993	0.928	0.988	0.980	0.868	0.855	0.973	0.819	0.975	0.936	0.405	0.103	0.100	0.663	0.021	0.000	0.000	0.312	