Supplement

Table S1. ANOVA main test results testing for the effect of experimental temperature (E; fixed factor) on size and relative growth rate (RGR) of *Ecklonia radiata* male and female gametophytes. Significant results are highlighted **bold** ($p < 0.05$)

Source of variation		df	Male			Female		
			MS	*F*	P	MS	*F*	P
Size	E	3	0.02	9.04	**< 0.001**	0.02	3.41	**0.029**
	Residual	32	0.00			0.00		
RGR	E	3	10.80	22.24	**< 0.001**	14.10	22.97	**< 0.001**
	Residual	32	0.49			0.61		

Table S2. ANOVA main test results testing for the effect of experimental temperature (E; fixed factor) on density of *Ecklonia radiata* gametophytes and sporophytes after 7, 14, 21 and 28 days of culture. Significant results are highlighted **bold** ($p < 0.05$)

Source of variation		df	Gametophytes			Sporophytes		
			MS	F	P	MS	F	P
Day 7	E	3	560.00	8.25	**< 0.001**			
	Residual	32	67.90					
Day 14	E	3	717.70	11.92	**< 0.001**	9.03	7.64	**< 0.001**
	Residual	32	60.20			1.18		
Day 21	E	3	570.50	10.22	**< 0.001**	776.10	2.012	0.132
	Residual	32	55.80			385.80		
Day 28	E	3				282.20	0.66	0.580
	Residual	32				424.80		

Sporophyte density day 14 data were transformed to meet the assumptions of ANOVA (before log transformation $p = 0.013$; after log transformation $p = 0.056$)

Table S3. ANOVA main test results testing for the effect of experimental temperature (E; fixed factor) on size and relative growth rate (RGR) of *Ecklonia radiata* gametophytes and sporophytes. Significant results are highlighted **bold** ($p < 0.05$)

Source of variation		df	Gametophytes			Sporophytes		
			MS	*F*	P	MS	*F*	P
Size	E	3	0.01	8.00	**< 0.001**	0.92	6.18	**0.002**
	Residual	32	0.00			0.15		
RGR	E	3	12.35	35.28	**< 0.001**	58.83	1.57	0.216
	Residual	32	0.35			37.52		

Size data were transformed to meet the assumptions of ANOVA (gametophyte size before log transformation $p = 0.019$; after log transformation $p = 0.051$. Sporophyte size before log transformation $p = 0.031$; after log transformation $p = 0.784$)

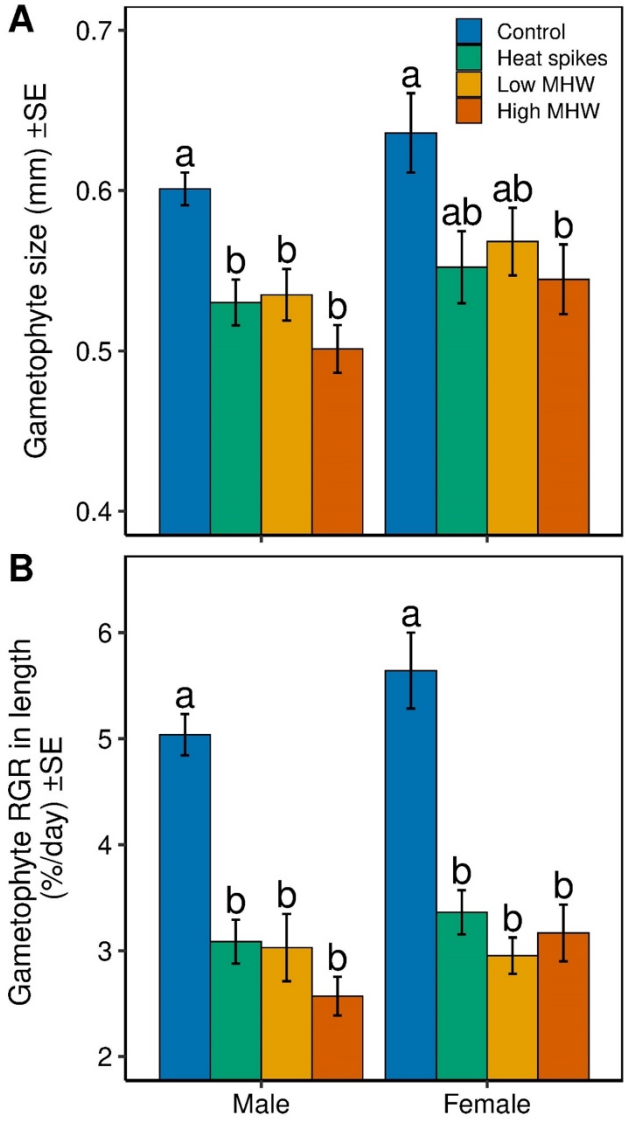

Figure S1. (A) Mean size and (B) relative growth rate (RGR) (±SE, n = 9) of *Ecklonia radiata* male and female gametophytes. Different lowercase letters indicate significant differences between temperature treatments within sex (Tukey's HSD test, $p < 0.05$)

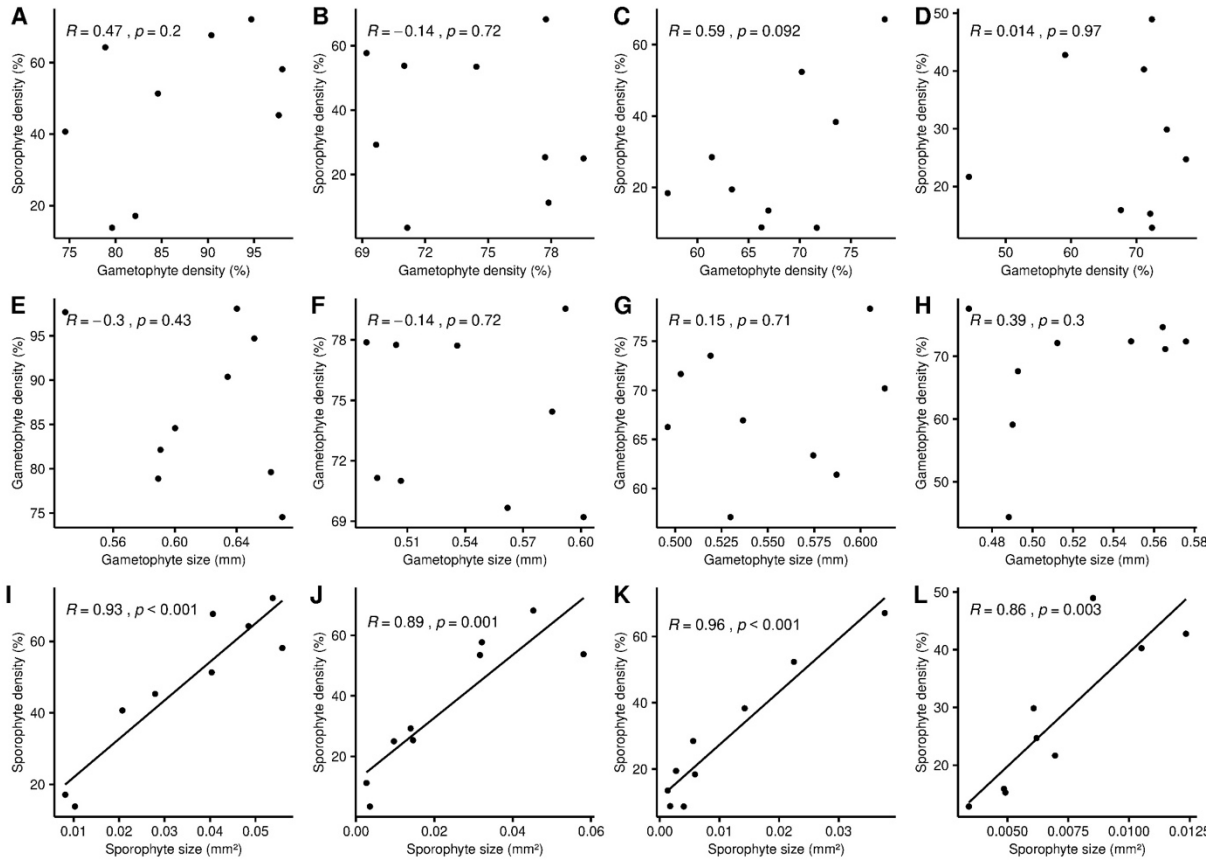

Figure S2. Pairwise relationships between traits of *Ecklonia radiata* gametophytes and sporophytes based on genotypes means. Pearson's r and significance are shown for each pair. (A,E,I) control treatment; (B,F,J) heat spikes treatment; (C,G,K) low MHW treatment; and (D,H,L) high MHW treatment

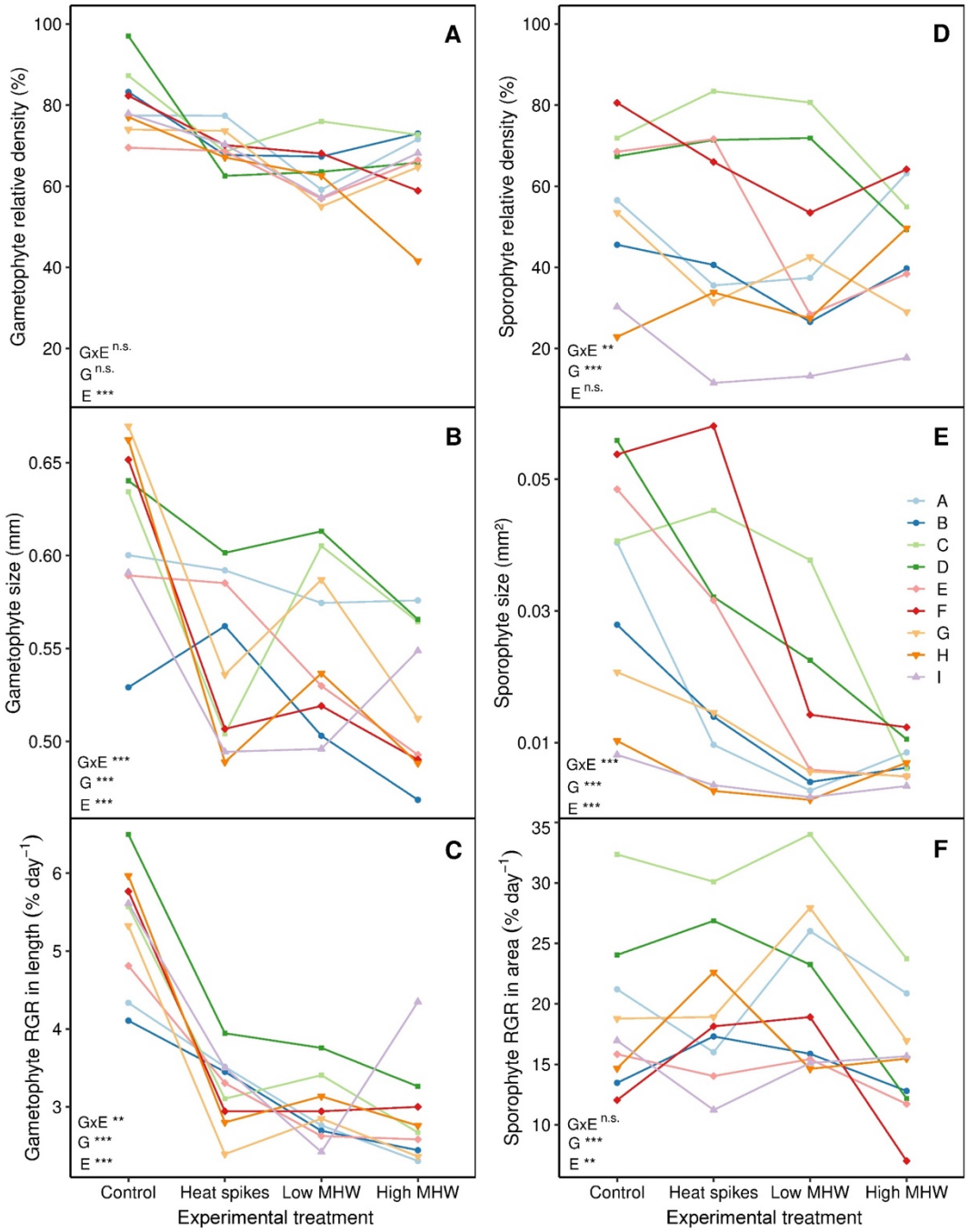

Figure S3. Reaction norms for density and growth patterns of *Ecklonia radiata* (A-C) gametophytes and (D-F) sporophytes to visualize genetic variation in plasticity among genotypes. Lines represent the contrast between the means of each genotype. Statistical significance of the factors for genotype (G), experimental treatment (E) and G by E interaction (G × E) is summarised: ***p < 0.001; ** p < 0.01; * p < 0.05; n.s: not significant. For full statistical report see Table 1