

Supplementary material

Does carbon storage confer waterlogging tolerance? Evidence from four evergreen species of a temperate rainforest

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Figure S1. Effect of waterlogging on survival of *Nothofagus dombeyi*, *Nothofagus nitida*, *Gevuina avellana* and *Embothrium coccineum* seedlings after 15 and 30 days under waterlogging conditions.

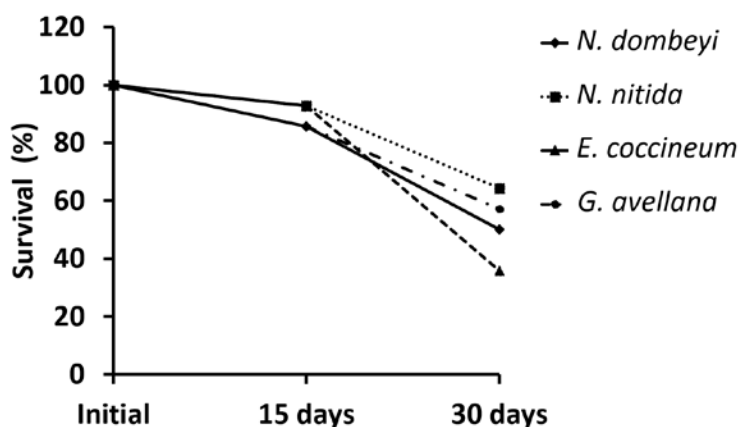


Figure S2. Effect of waterlogging on the health status of *Nothofagus dombeyi*, *Nothofagus nitida*, *Gevuina avellana* and *Embothrium coccineum* seedlings after 15 and 30 days under waterlogging conditions. ++ indicates healthy plants and without visible symptoms of damage, +- indicates plants with < 50% leaf shedding or < 50% attached leaves dehydrated or yellow and -- indicates plants with > 50% leaf shedding or > 50% leaves were dehydrated, yellow, or brown.

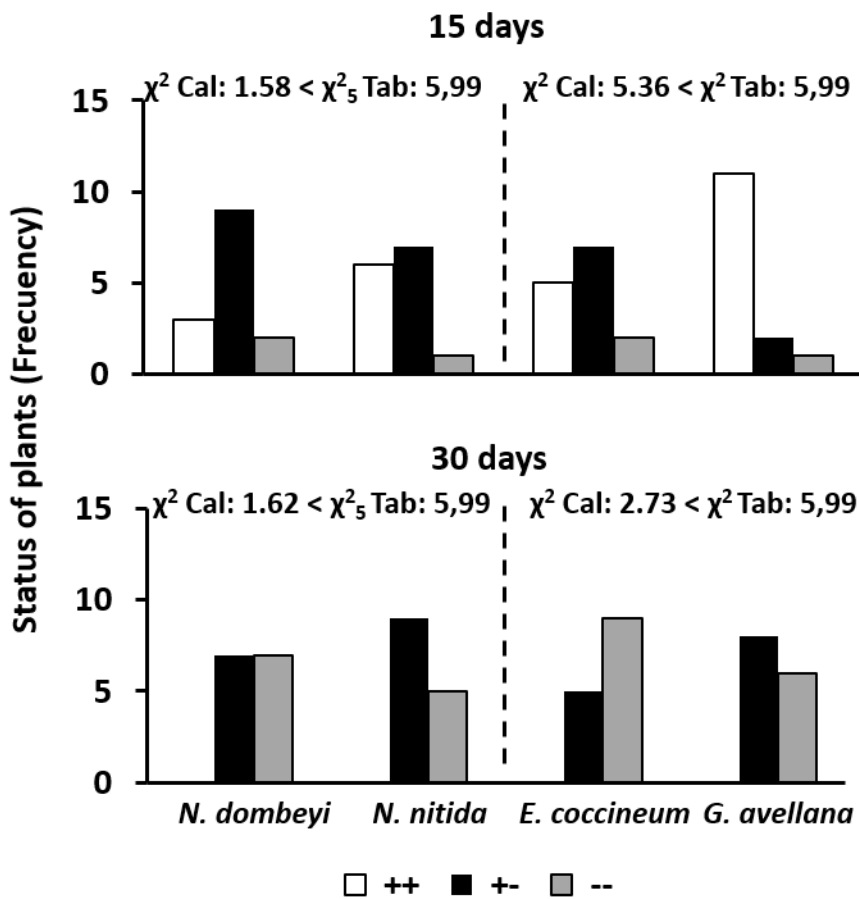


Figure S3. Cluster roots (CR) of *Embothrium coccineum* and *Gevuina avellana* seedlings grown under control (A - B) and waterlogged conditions (C - D). Black bar in represents 1 cm.

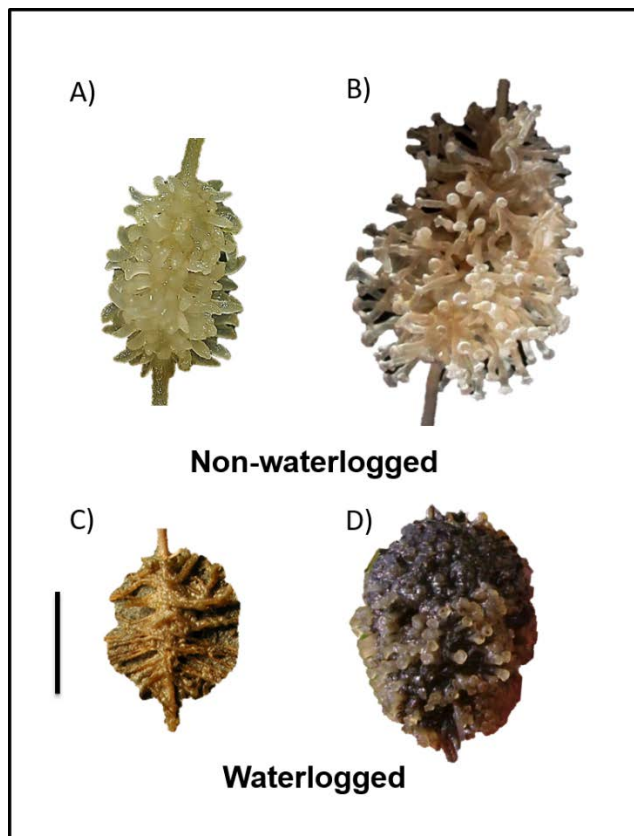


Figure S4. Effect of waterlogging on cluster root (CR) formation in two Proteaceae species (*Gevuina avellana* and *Embothrium coccineum*). A) Mean CR number and B) CR /root biomass ratio at the end of the experiment, under waterlogging and control conditions. Each value represents the mean of five independent measures \pm SE. Capital letters indicate differences between family-related species within the same treatment and lowercase letters indicate differences between treatments within the same species ($P < 0.05$).

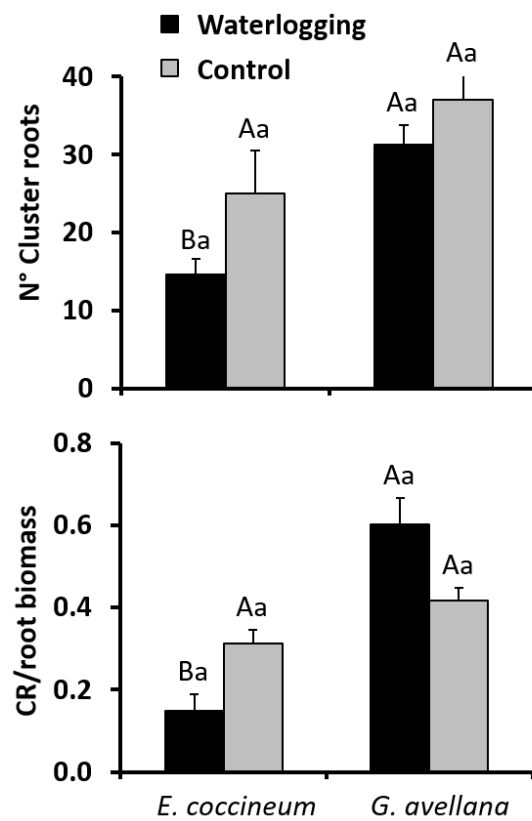


Table S1. Two-way ANOVA results of the effects of waterlogging treatment (T), species (Sp.) and their interaction (T x Sp.) on morphological variables of seedlings with contrasting shade-tolerance in two con-familial species pairs of Southern Chile (Nothofagaceae: *Nothofagus dombeyi* and *Nothofagus nitida*, Proteaceae: *Embothrium coccineum* and *Gevuina avellana*).

		Nothofagaceae			Proteaceae	
		<i>df</i>	<i>F-ratio</i>	<i>P-value</i>	<i>F-ratio</i>	<i>P-value</i>
RGR _H	T	1	17.377	< 0.001	10.989	0.002
	Sp.	1	1.653	0.206	142.992	< 0.001
	TxSp.	1	0.310	0.581	9.043	0.005
	Total	19				
RGR _B	T	1	8.160	0.021	14.835	0.005
	Sp.	1	8.833	0.018	0.782	0.048
	TxSp.	1	3.381	0.103	9.466	0.015
	Total	19				
Shoot/Root	T	1	15.269	0.004	0.017	0.900
	Sp.	1	6.994	0.029	1.780	0.219
	TxSp.	1	8.367	0.020	2.573	0.147
	Total	19				
N° CR	T	1			3.771	0.088
	Sp.	1			12.105	0.008
	TxSp.	1			0.321	0.587
	Total	19				
CR/Total root ratio	T	1			0.491	0.503
	Sp.	1			19.925	0.002
	TxSp.	1			2.100	0.185
	Total	19				

Table S2. Two-way ANOVA results of the effects of waterlogging treatment (T), species (Sp.) and their interaction (T x Sp.) on changes in total soluble sugar (TSS) and Starch (St) concentrations relative to pre-experimental concentration in different tissues of seedlings with contrasting shade-tolerance in two con-familial species pairs of Southern Chile (Nothofagaceae: *Nothofagus dombeyi* and *Nothofagus nitida*, Proteaceae: *Embothrium coccineum* and *Gevuina avellana*).

		Nothofagaceae					Proteaceae			
		TSS		St		TSS		St		
		<i>F</i>	<i>P</i>	<i>F</i>	<i>P</i>	<i>F</i>	<i>P</i>	<i>F</i>	<i>P</i>	
	<i>df</i>	<i>ratio</i>	<i>value</i>	<i>ratio</i>	<i>value</i>	<i>ratio</i>	<i>value</i>	<i>ratio</i>	<i>value</i>	
Leaves	T	1	14.833	0.005	0.006	0.942	407.725	<0.001	3.833	0.086
	Sp.	1	18.316	0.003	13.765	0.006	174.366	<0.001	38.182	<0.001
	TxSp.	1	0.109	0.750	0.231	0.644	139.964	<0.001	2.425	0.158
	Total	11								
Shoot	T	1	5.825	0.042	0.016	0.901	1.251	0.296	2.143	0.181
	Sp.	1	22.068	0.002	8.332	0.020	17.092	0.003	2.148	0.181
	TxSp.	1	0.259	0.624	0.673	0.436	0.882	0.375	2.937	0.125
	Total	11								
Root	T	1	0.107	0.752	28.089	<0.001	8.713	0.018	14.643	0.003
	Sp.	1	8.014	0.022	0.101	0.759	0.014	0.909	0.254	0.628
	TxSp.	1	0.211	0.658	30.213	<0.001	34.997	<0.001	16.828	0.003
	Total	11								
CR	T	1					24.143	0.001	8.810	0.018
	Sp.	1					0.009	0.926	7.671	0.024
	TxSp.	1					21.975	0.002	87.216	<0.001
	Total	11								