

Supplementary material

Drought alters plant-soil feedback effects on biomass allocation but not on plant performance

Rutger A. Wilschut^{1*} & Mark van Kleunen^{1,2}

¹Ecology Group, Department of Biology, University of Konstanz, Konstanz, Germany

²Zhejiang Provincial Key Laboratory of Plant Evolutionary Ecology and Conservation, Taizhou University, Taizhou, China

*Correspondence (R.A. Wilschut): rutger.wilschut@uni-konstanz.de, tel: +497531883321

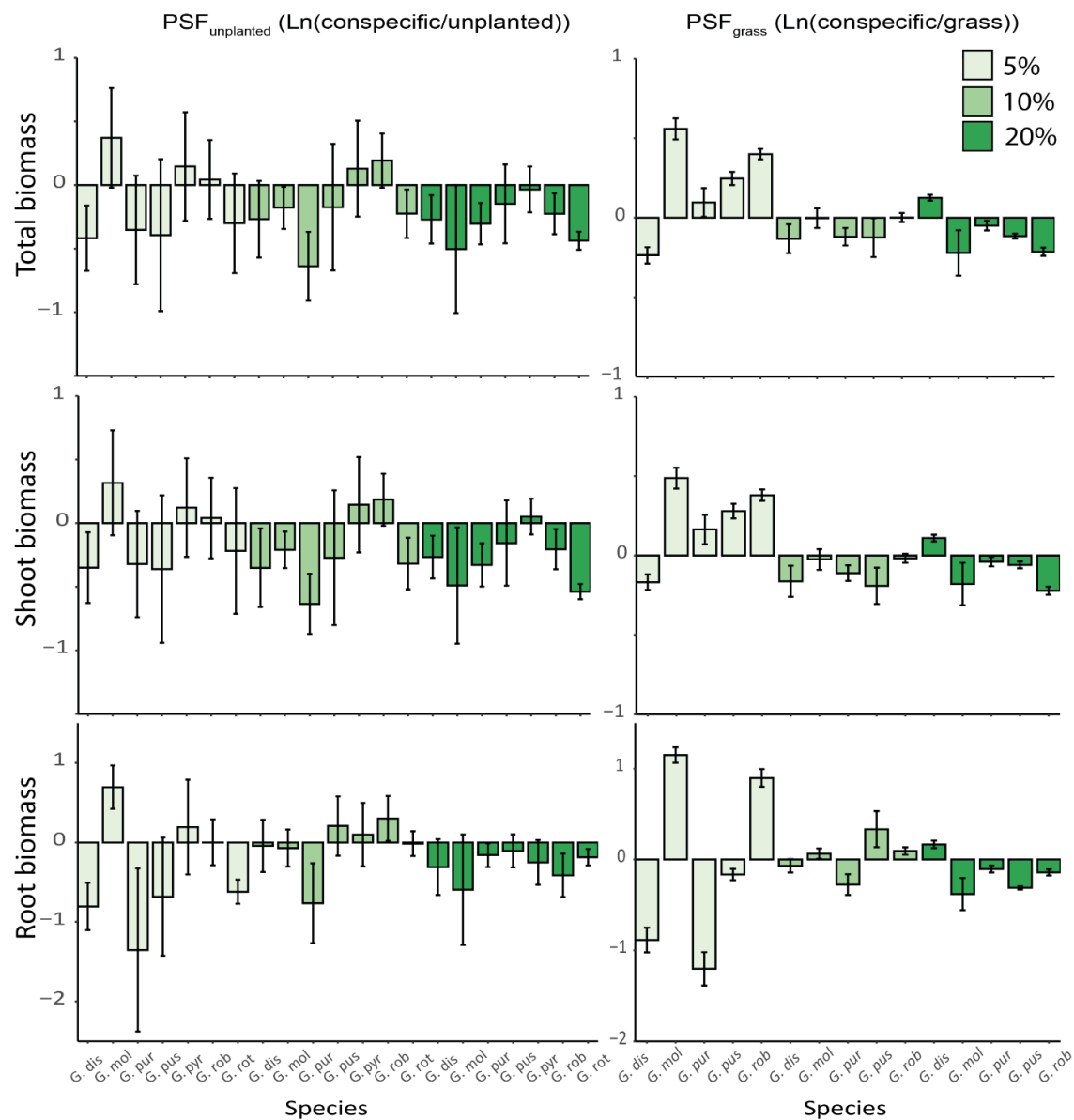


Fig. S1 *Geranium* species plant-soil feedback responses on total, shoot and root biomass under three soil moisture regimes. Plant-soil feedbacks are calculated as $PSF_{unplanted} (\ln(RRW_{conspecific} / RRW_{unplanted}))$ (left panels) or $PSF_{grass} (\ln(RRW_{conspecific} / RRW_{grass}))$ (right panels). Soil moisture levels are colour-coded. Bars represent averages $\pm$ standard errors

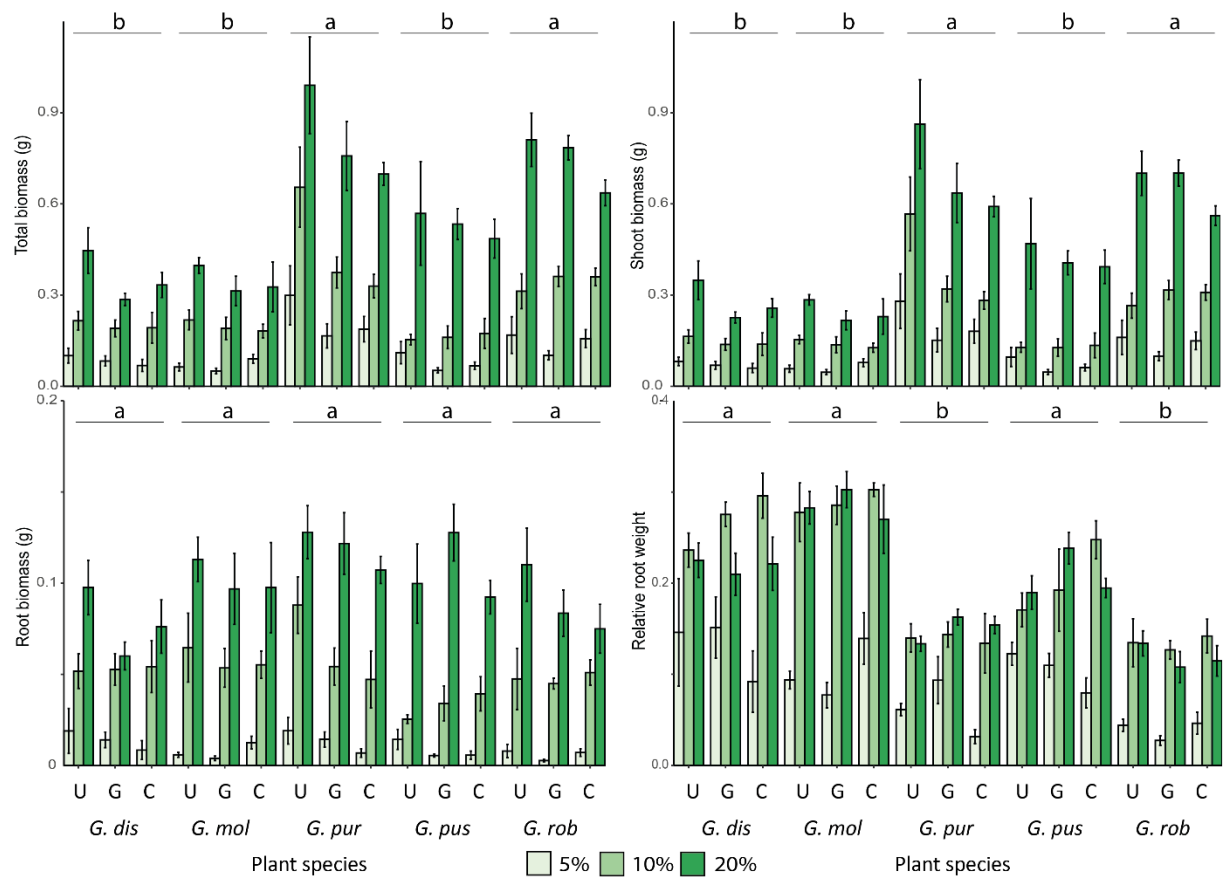


Fig. S2 Plant biomass responses of five different *Geranium* species (See Table 1) to three soil conditioning treatments and three soil moisture levels (5, 10, 20%). The four panels show average total, shoot and root biomass and relative root weight (root biomass/total biomass) of the five species in response to unplanted control (U), grass-conditioned (G) and conspecific soil (C). Soil moisture levels are colour-coded. Small letters indicate significant differences between species based on post-hoc analysis. Bars represent averages $\pm$ standard errors

Table S1: Correlation test results between total biomass of conditioning *Geranium* species or *Bromus hordeaceus* and *Geranium* biomass in the feedback phase. Data from all soil-moisture treatments were used. Pearson correlation coefficient *r*, *t*-statistic and *p*-values are shown.

Conditioning biomass	Feedback biomass	<i>r</i>	<i>t</i>	<i>p</i>
<i>Geranium dissectum</i>	<i>Geranium dissectum</i>	0.36	1.4	0.19
<i>Geranium molle</i>	<i>Geranium molle</i>	-0.06	-0.21	0.83
<i>Geranium purpureum</i>	<i>Geranium purpureum</i>	-0.06	-0.22	0.83
<i>Geranium pusillum</i>	<i>Geranium pusillum</i>	0.21	0.78	0.45
<i>Geranium robertianum</i>	<i>Geranium robertianum</i>	0.18	0.66	0.52
<i>Geranium rotundifolium</i>	<i>Geranium rotundifolium</i>	0.15	0.48	0.64
<i>Geranium pyrenaicum</i>	<i>Geranium pyrenaicum</i>	-0.02	-0.05	0.96
<i>Bromus hordeaceus</i>	<i>Geranium dissectum</i>	-0.14	-0.52	0.61
<i>Bromus hordeaceus</i>	<i>Geranium molle</i>	0.4	1.56	0.14
<i>Bromus hordeaceus</i>	<i>Geranium purpureum</i>	-0.26	-0.98	0.35
<i>Bromus hordeaceus</i>	<i>Geranium pusillum</i>	-0.05	-0.17	0.87
<i>Bromus hordeaceus</i>	<i>Geranium robertianum</i>	0.01	0.04	0.97

Table S2: Effects of fixed factors ‘soil conditioning’ and ‘soil moisture’, and their two-way interaction on total biomass of individual *Geranium* species. The upper part of the table shows the results for the models that included data from conspecific and control soils, while the lower part shows the results for models that included data from conspecific, grass-conditioned control and unplanted control soils (See methods). Significant results ($P < 0.05$) are shown in bold, and marginally significant results ($0.05 \leq P < 0.1$) are shown in italics.

	Own-conditioned and unconditioned control soils																				
	<i>G. dissectum</i>			<i>G. molle</i>			<i>G. purpureum</i>			<i>G. pusillum</i>			<i>G. pyrenaicum</i>			<i>G. robertianum</i>			<i>G. rotundifolium</i>		
	χ^2	df	p	χ^2	df	p	χ^2	df	p	χ^2	df	p	χ^2	df	p	χ^2	df	p	χ^2	df	p
Conditioning (C)	3.4	1	0.06	0.4	1	0.52	11.4	1	<0.001	2	1	0.16	0.14	1	0.7	0.4	1	0.53	3.3	1	0.07
Moisture (M)	96.4	1	<0.001	57.8	1	<0.001	62.5	1	<0.001	56.9	1	<0.001	88.2	1	<0.001	122.8	1	<0.001	55.8	1	<0.001
C*M	0.01	1	0.92	2.54	1	0.11	0.12	1	0.73	0.73	1	0.39	0.86	1	0.35	1.3	1	0.26	0.5	1	0.5
	Own-conditioned, grass-conditioned and unconditioned control soils																				
	<i>G. dissectum</i>			<i>G. molle</i>			<i>G. purpureum</i>			<i>G. pusillum</i>			<i>G. robertianum</i>								
	χ^2	df	p	χ^2	df	p	χ^2	df	p	χ^2	df	p	χ^2	df	p						
Conditioning (C)	35.8	2	<0.001	11.5	2	<0.01	14.6	2	<0.001	18.9	2	<0.001	0.5	2	0.46						
Moisture (M)	62.2	1	<0.001	72	1	<0.001	79.4	1	<0.001	91	1	<0.001	76.9	1	<0.001						
C*M	0.7	2	0.69	4.3	2	0.12	0.02	2	0.9	0.7	2	0.7	0.1	2	0.8						