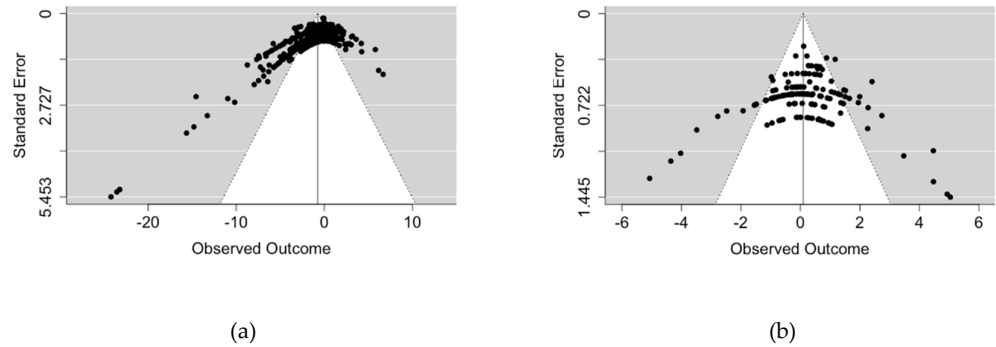


**Figure S1.** PRISMA diagram showing the literature search and exclusion process using the search terms above. Numbers in parentheses indicate the number of articles included or excluded at each step.



**Figure S2.** Funnel plots for datasets used in the null model of the water supply decrease (a) and increase (b) datasets. The x-axis shows observed outcome of effect size (Hedge's  $g$ ) and the y-axis shows the standard error. Note, outliers with observed outcomes  $<-54$  have been removed from the decrease dataset funnel plot.

**Table S1.** Model selection table of Multivariate Meta-analysis models explaining variation in Hedges  $g$  in the water supply decrease dataset, their  $\Delta$  Akaike Information Criterion.

MODEL	AIC	$\Delta$ AIC
SPECIES + ARTICLE/STUDY	<b>3000.796</b>	
SPECIES + ARTICLE	3081.746	80.95
ARTICLE/STUDY	3090.399	8.653
SPECIES + ARTICLE/STUDY	3136.007	45.608
ARTICLE	3168.853	32.846
FAMILY	3416.499	247.646
NULL	3513.115	96.616

**Table S2.** Model selection table of Multivariate Meta-analysis models explaining variation in Hedges  $g$  in the water supply increase dataset, their  $\Delta$  Akaike Information Criterion.

MODEL	AIC	$\Delta$ AIC
SPECIES + ARTICLE	<b>459.7803</b>	
ARTICLE	460.4917	0.7114
SPECIES + ARTICLE/STUDY	461.2957	0.804
ARTICLE/STUDY	461.9693	0.6736
SPECIES	497.6587	35.6894
FAMILY	512.5064	14.8477
NULL	532.6137	20.1073

**Table S3.** Estimates of Hedges  $g$  for each moderator variable within the water supply decrease dataset.

CATEGORY	ESTIMATE	SE	ZVAL	PVAL	CI.LB	CI.UB
OVERALL MEAN (491)	-0.75	0.17409897	-4.3256289	1.52E-05	-1.09	-0.41
COMMUNITY (56)	-0.71	0.25303591	-2.8200091	0.00480223	-1.21	-0.22
FORB (162)	-0.51	0.22599366	-2.2732851	0.023009	-0.96	-0.07
GRAMINOID (120)	-0.73	0.23351541	-3.1303313	0.00174609	-1.19	-0.27
LEGUME (26)	-0.2	0.29629125	-0.6889883	0.49083064	-0.78	0.38
SHRUB (26)	-0.66	0.36538104	-1.8058759	0.07093773	-1.38	0.06
TREE (101)	-1.22	0.35087089	-3.4765849	0.00050784	-1.91	-0.53
IMMATURE (318)	-0.8	0.24365677	-3.3000534	0.00096666	-1.28	-0.33
MATURE (173)	-0.7	0.24770242	-2.8354026	0.0045768	-1.19	-0.22
COMMON GARDEN (79)	-0.56	0.38086353	-1.474168	0.14043636	-1.31	0.19
CONTROLLED ENVIRONMENT (212)	-0.85	0.25054731	-3.3970046	0.00068128	-1.34	-0.36
IN-SITU (200)	-0.72	0.31590534	-2.2929604	0.02185029	-1.34	-0.11
ABOVE-GROUND BIOMASS (206)	-0.97	0.16400585	-5.9183439	3.25E-09	-1.29	-0.65
BELOW-GROUND BIOMASS (38)	-0.47	0.18391452	-2.5766031	0.00997764	-0.83	-0.11
HEAT RESISTANCE (6)	0.75	0.67730773	1.10877763	0.26752612	-0.58	2.08
PERCENT COVER (18)	-0.83	0.34392337	-2.4012787	0.01633789	-1.5	-0.15
RATE OF PHOTOSYNTHESIS (104)	-1.65	0.17361961	-9.4984232	2.13E-21	-1.99	-1.31
QUANTUM YIELD PSII (35)	-0.44	0.20248879	-2.1682191	0.03014202	-0.84	-0.04
ROOT:SHOOT (79)	0.66	0.16735805	3.94344367	8.03E-05	0.33	0.99
SPECIES RICHNESS (5)	-0.8	0.39947679	-2.0135605	0.04405569	-1.59	-0.02
0-20% (44)	-0.43	0.24774266	-1.7304499	0.08354993	-0.91	0.06
21-40% (134)	-0.47	0.21472401	-2.1809053	0.02919043	-0.89	-0.05

41–60% (144)	–0.67	0.21449393	–3.1284941	0.00175705	–1.09	–0.25
61–80% (66)	–1.09	0.22293026	–4.8974825	9.71E-07	–1.53	–0.65
81–100% (103)	–0.89	0.23553992	–3.785246	0.00015356	–1.35	–0.43

**Table S4.** Estimates of Hedges  $g$  for each moderator variable within the water supply increase dataset.

CATEGORY	ESTIMATE	SE	ZVAL	PVAL	CI.LB	CI.UB
OVERALL MEAN (156)	0.1	0.26904698	0.35621413	0.72168021	–0.43	0.62
COMMUNITY (54)	–0.12	0.33645839	–0.3644534	0.71551945	–0.78	0.54
FORB (27)	–0.01	0.33412212	–0.0413689	0.96700183	–0.67	0.64
GRAMINOID (47)	0.18	0.320774	0.56823108	0.56987807	–0.45	0.81
LEGUME (12)	–0.03	0.37299598	–0.0732101	0.9416389	–0.76	0.7
SHRUB (10)	–0.53	0.44059639	–1.2020132	0.22935842	–1.39	0.33
TREE (6)	0.34	0.75333526	0.45523863	0.64893757	–1.13	1.82
ABOVE-GROUND BIOMASS (85)	0.44	0.30719641	1.42449929	0.15430199	–0.16	1.04
BELOW-GROUND BIOMASS (6)	0.35	0.43193662	0.80610678	0.42018129	–0.5	1.19
FREEZING RESISTANCE (12)	–1.45	0.57381452	–2.5271049	0.01150071	–2.57	–0.33
PERCENT COVER (35)	0.24	0.3408286	0.69273177	0.4884779	–0.43	0.9
RATE OF PHOTOSYNTHESIS (6)	0.59	0.4623429	1.27782797	0.20131009	–0.32	1.5
QUANTUM YIELD PSII (4)	0.4	0.38430321	1.0346308	0.30084136	–0.36	1.15
SPECIES RICHNESS (8)	0.48	0.41102042	1.17224296	0.24109952	–0.32	1.29
0–20% (26)	0.21	0.41630158	0.49638863	0.61962025	–0.61	1.02
101–120% (4)	0.16	0.99579875	0.15681773	0.8753885	–1.8	2.11
21–40% (26)	0.31	0.41205714	0.74863577	0.45407677	–0.5	1.12
41–60% (46)	0	0.43807865	–0.0090797	0.99275553	–0.86	0.85
SUPPLEMENTAL (47)	0.16	0.37779729	0.43319195	0.66487533	–0.58	0.9