

Supplementary Data 1. Final model results and statistics for all main text models. Sample sizes are given as number of observations with number of studies in parentheses. Log-likelihood ratio tests (LRT) and p values in comparison to intercept-only null models are provided. Total model variance (σ^2), total unexplained heterogeneity (I^2) and R^2 are provided. Note that some models had extremely low heterogeneity (particularly Root Biomass), leading to R^2 of 100%. We thus calculated an alternative R^{2*} , which is the proportion of total variance in y explained by moderator (see Methods). Contrasts between factors (e.g., nativeness levels) were conducted with two-tailed tests with the t-distribution. Contrast estimates (e.g., difference between nativeness levels) are provided along with 95% confidence intervals, degrees of freedom, t-test statistic, and p-values.

	N articles (n observations)	Random effect	Comparison to intercept- only (LRT, p)	Contrast±95%CIs	Total variance	Unexplained heterogeneity	Explained variance
Ecosystem - Bare Ground							
Africa Comparison	Intact Africa=5(3), Introduced=34(20)	~1 Citation / Observation ID	0.72, 0.398	0.53±[-0.76,1.82], df=21, t=0.85, p=0.404	σ_{null}^2 =0.85, σ_{model}^2 =0.82	I_{null}^2 =89.37, I_{model}^2 =88.78	R^2 =3.75, R^{2*} =0.09
Herbivore nativeness	Native=42(16), Introduced=34(20)	~1 Citation / Observation ID	3.06, 0.08	0.45±[0.93,-0.03], df=74, t=-1.85, p=0.068	σ_{null}^2 =0.62, σ_{model}^2 =0.52	I_{null}^2 =86.3, I_{model}^2 =83.92	R^2 =8.78, R^{2*} =0.27
Invasive	Native=42(16), Invasive=22(13)	~1 Citation / Observation ID	1.93, 0.165	0.34±[0.81,-0.13], df=62, t=-1.46, p=0.149	σ_{null}^2 =0.42, σ_{model}^2 =0.36	I_{null}^2 =81.91, I_{model}^2 =79.18	R^2 =6.89, R^{2*} =0.12
Ecosystem - CO2 Respiration							
Herbivore nativeness	Native=70(7), Introduced=5(3)	~1 Citation / Observation ID, ~Time Series Experiment ID	0.87, 0.35	-0.66±[0.95,-2.28], df=8, t=0.95, p=0.372	σ_{null}^2 <0.01, σ_{model}^2 <0.01	I_{null}^2 <0.01, I_{model}^2 <0.01	R^2 =1.36, R^{2*} =0.39
Invasive	Native=70(7), Invasive=5(3)	~1 Citation / Observation ID, ~Time Series Experiment ID	0.87, 0.35	-0.66±[0.95,-2.28], df=8, t=0.95, p=0.372	σ_{null}^2 <0.01, σ_{model}^2 <0.01	I_{null}^2 <0.01, I_{model}^2 <0.01	R^2 =1.36, R^{2*} =0.39
Ecosystem - Dead Vegetation							
Herbivore nativeness	Native=152(33), Introduced=47(17)	~1 Citation / Species ID / Observation ID	3.47, 0.062	-0.35±[0.02,-0.71], df=48, t=1.89, p=0.064	σ_{null}^2 =0.4, σ_{model}^2 =0.37	I_{null}^2 =73.3, I_{model}^2 =71.58	R^2 =5.47, R^{2*} =2.23
Invasive	Native=152(33), Invasive=17(8)	~1 Citation / Species ID / Observation ID	2.02, 0.155	-0.35±[0.14,-0.85], df=39, t=1.44, p=0.158	σ_{null}^2 =0.39, σ_{model}^2 =0.37	I_{null}^2 =73.49, I_{model}^2 =72.04	R^2 =2.95, R^{2*} =1.59
Ecosystem - Growth Rates							
Africa Comparison	Intact Africa=35(5), Introduced=20(5)	~1 Citation / Observation ID	2.62, 0.105	0.62±[0.125], df=8, t=2.29, p=0.051	σ_{null}^2 =0.29, σ_{model}^2 =0.15	I_{null}^2 =59.34, I_{model}^2 =43.23	R^2 =37.36, R^{2*} =16.58

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	N articles (n observations)	Random effect	Comparison to intercept- only (LRT, p)	Contrast±95%CIs	Total variance	Unexplained heterogeneity	Explained variance
Herbivore nativeness	Native=129(13), Introduced=20(5)	~1 Citation / Observation ID	3.11, 0.078	0.49±[1,-0.03], df=16, t=-2.02, p=0.061	$\sigma^2_{null}=0.31$, $\sigma^2_{model}=0.26$	$I^2_{null}=70.52$, $I^2_{model}=66.31$	$R^2=9.65$, $R^{2*}=5.84$
Ecosystem - Litter Cover							
Herbivore nativeness	Native=91(28), Introduced=38(15)	~1 Citation / Species ID / Observation ID	3.12, 0.077	-0.4±[0.05,-0.85], df=41, t=1.81, p=0.078	$\sigma^2_{null}=0.5$, $\sigma^2_{model}=0.45$	$I^2_{null}=79.34$, $I^2_{model}=77.37$	$R^2=7.01$, $R^{2*}=2.97$
Invasive	Native=91(28), Invasive=9(6)	~1 Citation / Species ID / Observation ID	1.76, 0.184	-0.43±[0.22,-1.08], df=32, t=1.36, p=0.184	$\sigma^2_{null}=0.5$, $\sigma^2_{model}=0.46$	$I^2_{null}=80.69$, $I^2_{model}=78.89$	$R^2=3.23$, $R^{2*}=2$
Ecosystem - Microbe Abundance							
Herbivore nativeness	Native=29(7), Introduced=24(4)	~1 Citation / Observation ID	0.19, 0.664	-0.18±[0.72,-1.08], df=9, t=0.44, p=0.668	$\sigma^2_{null}=0.39$, $\sigma^2_{model}=0.37$	$I^2_{null}=69.53$, $I^2_{model}=68.38$	$R^2=2.08$, $R^{2*}=1.63$
Invasive	Native=29(7), Invasive=22(3)	~1 Citation / Observation ID	0.08, 0.773	-0.13±[0.92,-1.19], df=8, t=0.29, p=0.777	$\sigma^2_{null}=0.44$, $\sigma^2_{model}=0.42$	$I^2_{null}=71.75$, $I^2_{model}=71.01$	$R^2=1.05$, $R^{2*}=0.93$
Ecosystem - Root Biomass							
Herbivore nativeness	Native=39(7), Introduced=12(3)	~1 Citation / Observation ID	1.52, 0.218	-0.14±[0.12,-0.41], df=8, t=1.23, p=0.253	$\sigma^2_{null}<0.01$, $\sigma^2_{model}<0.01$	$I^2_{null}<0.01$, I^2_{model} <0.01	$R^2=100$, $R^{2*}=1.24$
Invasive	Native=39(7), Invasive=12(3)	~1 Citation / Observation ID	1.52, 0.218	-0.14±[0.12,-0.41], df=8, t=1.23, p=0.253	$\sigma^2_{null}<0.01$, $\sigma^2_{model}<0.01$	$I^2_{null}<0.01$, I^2_{model} <0.01	$R^2=100$, $R^{2*}=1.24$
Ecosystem - Soil C:N							
Herbivore nativeness	Native=19(9), Introduced=11(5)	~1 Citation / Observation ID	0.13, 0.721	0.09±[0.62,-0.44], df=12, t=-0.36, p=0.725	$\sigma^2_{null}=0.11$, $\sigma^2_{model}=0.11$	$I^2_{null}=37.27$, $I^2_{model}=36.51$	$R^2=1.69$, $R^{2*}=0.4$
Ecosystem - Soil Compaction							
Herbivore nativeness	Native=32(9), Introduced=15(6)	~1 Citation / Observation ID	0.04, 0.838	0.07±[0.8,-0.66], df=13, t=-0.2, p=0.841	$\sigma^2_{null}=0.35$, $\sigma^2_{model}=0.35$	$I^2_{null}=68.59$, $I^2_{model}=68.55$	$R^2=0.31$, $R^{2*}=0.13$

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	N articles (n observations)	Random effect	Comparison to intercept- only (LRT, p)	Contrast±95%CIs	Total variance	Unexplained heterogeneity	Explained variance
Invasive	Native=32(9), Invasive=9(3)	~1 Citation / Observation ID	4.04, 0.045	-0.48±[-0.01,-0.96], df=10, t=2.26, p=0.047	$\sigma^2_{null}=0.15$, σ^2_{model} =0.09	$I^2_{null}=48.71$, $I^2_{model}=36.34$	$R^2=31.36$, $R^{2*}=11.65$
Ecosystem - Soil K							
Herbivore nativeness	Native=26(9), Introduced=9(4)	~1 Citation / Observation ID	0.13, 0.717	0.1±[0.71,-0.51], df=11, t=-0.36, p=0.724	σ^2_{null} =0.39, σ^2_{model} =0.38	$I^2_{null}=77.51$, $I^2_{model}=77.03$	$R^2=0.51$, $R^{2*}=0.36$
Ecosystem - Soil Labile N							
Herbivore nativeness	Native=94(18), Introduced=22(4)	~1 Citation / Observation ID	0.74, 0.389	0.16±[0.55,-0.22], df=20, t=-0.9, p=0.381	$\sigma^2_{null}=0.12$, σ^2_{model} =0.11	$I^2_{null}=62.42$, $I^2_{model}=60.47$	$R^2=3.61$, $R^{2*}=0.67$
Ecosystem - Soil Mg							
Africa Comparison	Intact Africa=12(3), Introduced=8(4)	~1 Citation / Observation ID	5.5, 0.019	-0.72±[-1.41,-0.03], df=5, t=-2.68, p=0.044	σ^2_{null} =0.34, σ^2_{model} =0.22	$I^2_{null}=77.35$, $I^2_{model}=68.79$	$R^2=36.98$, $R^{2*}=27.85$
Herbivore nativeness	Native=30(10), Introduced=8(4)	~1 Citation / Observation ID	3.27, 0.07	-0.56±[0.09,-1.21], df=12, t=1.89, p=0.084	$\sigma^2_{null}=0.37$, σ^2_{model} =0.32	$I^2_{null}=74.84$, $I^2_{model}=71.25$	$R^2=14.4$, $R^{2*}=9.32$
Ecosystem - Soil Moisture							
Herbivore nativeness	Native=47(15), Introduced=22(8)	~1 Citation / Observation ID	0.97, 0.324	0.36±[1.1,-0.39], df=21, t=-1, p=0.331	σ^2_{null} =0.89, σ^2_{model} =0.86	$I^2_{null}=84.5$, I^2_{model} =83.8	$R^2=3.14$, $R^{2*}=2.04$
Invasive	Native=47(15), Invasive=13(4)	~1 Citation / Observation ID	0.05, 0.829	0.1±[1.07,-0.87], df=17, t=-0.22, p=0.831	σ^2_{null} =0.89, σ^2_{model} =0.89	$I^2_{null}=84.01$, $I^2_{model}=83.85$	$R^2=0.19$, $R^{2*}=0.12$
Ecosystem - Soil Organic C							
Herbivore nativeness	Native=30(10), Introduced=30(4)	~1 Citation / Observation ID	0.01, 0.908	0.03±[0.57,-0.51], df=12, t=-0.11, p=0.91	$\sigma^2_{null}=0.17$, σ^2_{model} =0.17	$I^2_{null}=60.16$, $I^2_{model}=59.85$	$R^2=0.12$, $R^{2*}=0.03$
Invasive	Native=30(10), Invasive=26(3)	~1 Citation / Observation ID	0.08, 0.776	0.08±[0.72,-0.56], df=11, t=-0.29, p=0.781	$\sigma^2_{null}=0.17$, σ^2_{model} =0.17	$I^2_{null}=61.03$, $I^2_{model}=60.57$	$R^2=1.02$, $R^{2*}=0.26$

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Ecosystem - Soil Organic Matter							
Herbivore nativeness	Native=22(12), Introduced=16(5)	~1 Citation / Observation ID	0.04, 0.841	0.06±[0.71,-0.58], df=15, t=-0.2, p=0.844	σ^2_{null} =0.32, σ^2_{model} =0.32	I^2_{null} =69.22, I^2_{model} =68.85	R^2 =0.29, R^{2*} <0.01
Ecosystem - Soil Respiration							
Herbivore nativeness	Native=107(8), Introduced=10(4)	~1 Citation / Species ID / Observation ID	1.64, 0.201	-0.49±[0.33,-1.31], df=10, t=1.33, p=0.213	σ^2_{null} =0.6, σ^2_{model} =0.54	I^2_{null} =68.88, I^2_{model} =66.11	R^2 =3.37, R^{2*} =0.4
Invasive	Native=107(8), Invasive=10(4)	~1 Citation / Species ID / Observation ID	1.64, 0.201	-0.49±[0.33,-1.31], df=10, t=1.33, p=0.213	σ^2_{null} =0.6, σ^2_{model} =0.54	I^2_{null} =68.88, I^2_{model} =66.11	R^2 =3.37, R^{2*} =0.4
Ecosystem - Soil Total C							
Africa Comparison	Intact Africa=30(6), Introduced=13(9)	~1 Citation / Species ID / Observation ID	0.02, 0.888	0.04±[-0.54,0.61], df=13, t=0.14, p=0.89	σ^2_{null} =0.26, σ^2_{model} =0.25	I^2_{null} =73.97, I^2_{model} =73.93	R^2 =0.12, R^{2*} =0.03
Herbivore nativeness	Native=119(28), Introduced=13(9)	~1 Citation / Species ID / Observation ID	0.01, 0.919	-0.02±[0.39,-0.44], df=130, t=0.1, p=0.919	σ^2_{null} =0.21, σ^2_{model} =0.21	I^2_{null} =61.69, I^2_{model} =61.68	R^2 =0.02, R^{2*} <0.01
Invasive	Native=119(28), Invasive=7(5)	~1 Citation / Species ID / Observation ID	<0.01, 0.958	0.01±[0.57,-0.54], df=124, t=-0.05, p=0.958	σ^2_{null} =0.23, σ^2_{model} =0.23	I^2_{null} =64.01, I^2_{model} =64.01	R^2 <0.01, R^{2*} <0.01
Ecosystem - Soil Total Ca							
Africa Comparison	Intact Africa=12(3), Introduced=10(4)	~1 Citation / Observation ID	1.51, 0.219	-0.38±[-1.17,0.4], df=5, t=-1.26, p=0.265	σ^2_{null} =0.42, σ^2_{model} =0.38	I^2_{null} =81.06, I^2_{model} =79.23	R^2 =9.21, R^{2*} =6.52
Herbivore nativeness	Native=30(10), Introduced=10(4)	~1 Citation / Observation ID	2.73, 0.099	-0.42±[0.12,-0.96], df=12, t=1.69, p=0.118	σ^2_{null} =0.37, σ^2_{model} =0.33	I^2_{null} =75.09, I^2_{model} =72.68	R^2 =9.18, R^{2*} =5.83
Ecosystem - Soil Total N							
Africa Comparison	Intact Africa=47(9), Introduced=19(10)	~1 Citation / Observation ID	1.26, 0.262	0.24±[-0.2,0.68], df=17, t=1.13, p=0.273	σ^2_{null} =0.4, σ^2_{model} =0.38	I^2_{null} =71.39, I^2_{model} =70.24	R^2 =3, R^2 *=1.09

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Herbivore nativeness	Native=173(38), Introduced=19(10)	~1 Citation / Observation ID	0.2, 0.655	0.08±[0.44,-0.28], df=190, t=-0.45, p=0.654	σ_{null}^2 =0.26, σ_{model}^2 =0.26	I_{null}^2 =60.02, I_{model}^2 =59.88	R^2 =0.23, R^{2*} =0.05
Invasive	Native=173(38), Invasive=13(7)	~1 Citation / Observation ID	0.33, 0.563	0.13±[0.56,-0.31], df=184, t=-0.58, p=0.561	σ_{null}^2 =0.24, σ_{model}^2 =0.23	I_{null}^2 =56.98, I_{model}^2 =56.76	R^2 =0.46, R^{2*} =0.09
Ecosystem - Soil Total P							
Africa Comparison	Intact Africa=46(9), Introduced=13(6)	~1 Citation / Observation ID	0.64, 0.423	-0.19±[-0.66,0.28], df=13, t=-0.85, p=0.409	σ_{null}^2 =0.22, σ_{model}^2 =0.21	I_{null}^2 =62.01, I_{model}^2 =60.38	R^2 =2.74, R^{2*} =1.12
Herbivore nativeness	Native=60(14), Introduced=13(6)	~1 Citation / Observation ID	1.06, 0.304	-0.26±[0.25,-0.78], df=18, t=1.07, p=0.301	σ_{null}^2 =0.27, σ_{model}^2 =0.25	I_{null}^2 =65.57, I_{model}^2 =63.83	R^2 =3.89, R^{2*} =1.7
Ecosystem - Soil pH							
Africa Comparison	Intact Africa=13(4), Introduced=14(6)	~1 Citation / Observation ID	0.61, 0.436	0.21±[-0.41,0.84], df=8, t=0.78, p=0.455	σ_{null}^2 =0.33, σ_{model}^2 =0.32	I_{null}^2 =70.94, I_{model}^2 =69.68	R^2 =3.59, R^{2*} =0.15
Herbivore nativeness	Native=48(14), Introduced=14(6)	~1 Citation / Observation ID	0.23, 0.635	0.25±[1.36,-0.86], df=18, t=-0.48, p=0.639	σ_{null}^2 =1.36, σ_{model}^2 =1.34	I_{null}^2 =88.7, I_{model}^2 =88.44	R^2 =0.83, R^{2*} =0.22
Invertebrates - Detritivore Abundance							
Herbivore nativeness	Native=116(17), Introduced=16(4)	~1 Citation / Observation ID	2.71, 0.1	0.96±[2.17,-0.26], df=19, t=-1.65, p=0.116	σ_{null}^2 =0.96, σ_{model}^2 =0.93	I_{null}^2 =88.4, I_{model}^2 =88.02	R^2 =9.49, R^{2*} =10.23
Invasive	Native=116(17), Invasive=11(3)	~1 Citation / Observation ID	3.22, 0.073	1.25±[2.72,-0.21], df=18, t=-1.8, p=0.089	σ_{null}^2 =1.08, σ_{model}^2 =1.05	I_{null}^2 =89.8, I_{model}^2 =89.45	R^2 =10.66, R^{2*} =12.77
Invertebrates - Herbivore Abundance							
Africa Comparison	Intact Africa=6(3), Introduced=35(5)	~1 Citation / Observation ID	1.12, 0.29	0.38±[-0.45,1.21], df=6, t=1.11, p=0.308	σ_{null}^2 =0.21, σ_{model}^2 =0.15	I_{null}^2 =50.59, I_{model}^2 =42.32	R^2 =10.53, R^{2*} =6.02

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Herbivore nativeness	Native=148(20), Introduced=35(5)	~1 Citation / Observation ID	1.03, 0.31	0.33±[0.98,-0.33], df=23, t=-1.02, p=0.317	$\sigma^2_{null}=0.41$, $\sigma^2_{model}=0.39$	$I^2_{null}=75.9$, $I^2_{model}=75.2$	$R^2=4.05$, $R^2*=2.87$
Invertebrates - Invertebrate Abundance							
Africa Comparison	Intact Africa=39(9), Introduced=121(13)	~1 Citation / Observation ID	1.2, 0.273	0.2±[-0.18,0.58], df=20, t=1.1, p=0.283	$\sigma^2_{null}=0.15$, $\sigma^2_{model}=0.14$	$I^2_{null}=61.14$, $I^2_{model}=59.62$	$R^2=5.13$, $R^2*=0.8$
Herbivore nativeness	Native=511(45), Introduced=121(13)	~1 Citation / Species ID / Observation ID	1.19, 0.276	0.22±[0.62,-0.18], df=56, t=-1.1, p=0.278	$\sigma^2_{null}=0.41$, $\sigma^2_{model}=0.4$	$I^2_{null}=80.76$, $I^2_{model}=80.4$	$R^2=1.79$, $R^2*=1.03$
Invasive	Native=511(45), Invasive=54(8)	~1 Citation / Species ID / Observation ID	0.66, 0.416	0.2±[0.7,-0.29], df=51, t=-0.82, p=0.418	$\sigma^2_{null}=0.43$, $\sigma^2_{model}=0.43$	$I^2_{null}=82.52$, $I^2_{model}=82.32$	$R^2=0.81$, $R^2*=0.47$
Invertebrates - Invertebrate Diversity							
Africa Comparison	Intact Africa=15(3), Introduced=49(7)	~1 Citation / Species ID / Observation ID	0.01, 0.941	0.01±[-0.34,0.37], df=8, t=0.07, p=0.943	$\sigma^2_{null}=0.06$, $\sigma^2_{model}=0.06$	$I^2_{null}=36.85$, $I^2_{model}=36.61$	$R^2=0.04$, $R^2*=0.01$
Herbivore nativeness	Native=111(19), Introduced=49(7)	~1 Citation / Observation ID	0.38, 0.536	0.21±[0.9,-0.48], df=24, t=-0.62, p=0.541	$\sigma^2_{null}=0.52$, $\sigma^2_{model}=0.52$	$I^2_{null}=84.76$, $I^2_{model}=84.59$	$R^2=1.74$, $R^2*=0.83$
Invasive	Native=111(19), Invasive=6(3)	~1 Citation / Observation ID	0.01, 0.904	-0.06±[0.95,-1.07], df=20, t=0.12, p=0.905	$\sigma^2_{null}=0.61$, $\sigma^2_{model}=0.61$	$I^2_{null}=87.58$, $I^2_{model}=87.58$	$R^2=0.03$, $R^2*=0.01$
Invertebrates - Predator Abundance							
Africa Comparison	Intact Africa=9(3), Introduced=18(6)	~1 Citation / Species ID / Observation ID, ~1 site_id	0.33, 0.567	0.13±[-0.29,0.56], df=7, t=0.73, p=0.487	$\sigma^2_{null}=0.04$, $\sigma^2_{model}=0.02$	$I^2_{null}=22.06$, $I^2_{model}=11.31$	$R^2=18.32$, $R^2*=0.22$
Herbivore nativeness	Native=108(18), Introduced=18(6)	~1 Citation / Observation ID	1.18, 0.278	0.2±[0.55,-0.15], df=22, t=-1.19, p=0.246	$\sigma^2_{null}=0.09$, $\sigma^2_{model}=0.07$	$I^2_{null}=38.36$, $I^2_{model}=34.41$	$R^2=6.36$, $R^2*=0.66$
Vertebrates - Bird Abundance							

Supplementary Data 1. Final model results and statistics for all main text models. Sample sizes are given as number of observations with number of studies in parentheses. Log-likelihood ratio tests (LRT) and p values in comparison to intercept-only null models are provided. Total model variance (σ^2), total unexplained heterogeneity (I^2) and R^2 are provided. Note that some some models had extremely low heterogeneity (particularly Root Biomass), leading to R^2 of 100%. We thus calculated an alternative R^{2*} , which is the proportion of total variance in y explained by moderator (see Methods). Contrasts between factors (e.g., nativeness levels) were conducted with two-tailed tests with the t-distribution. Contrast estimates (e.g., difference between nativeness levels) are provided along with 95% confidence intervals, degrees of freedom, t-test statistic, and p-values.

	N articles (n observations)	Random effect	Comparison to intercept- only (LRT, p)	Contrast±95%CIs	Total variance	Unexplained heterogeneity	Explained variance
Herbivore nativeness	Native=92(9), Introduced=23(4)	~1 Citation / Species ID / Observation ID	1.07, 0.301	-0.25±[0.28,-0.77], df=11, t=1.04, p=0.319	σ^2_{null} =0.35, σ^2_{model} =0.34	I^2_{null} =85.6, I^2_{model} =85.35	R^2 =2.84, R^{2*} =1.78
Invasive	Native=92(9), Invasive=19(3)	~1 Citation / Species ID / Observation ID	0.6, 0.44	-0.22±[0.41,-0.85], df=10, t=0.78, p=0.455	σ^2_{null} =0.35, σ^2_{model} =0.35	I^2_{null} =85.91, I^2_{model} =85.84	R^2 =1.91, R^{2*} =1.23
Vertebrates - Bird Diversity							
Herbivore nativeness	Native=39(7), Introduced=18(3)	~1 Citation / Observation ID	1.67, 0.196	-0.13±[0.09,-0.36], df=8, t=1.37, p=0.209	σ^2_{null} =0.07, σ^2_{model} =0.06	I^2_{null} =69.76, I^2_{model} =66.78	R^2 =6.43, R^{2*} =1.1
Vertebrates - Mammal Abundance							
Africa Comparison	Intact Africa=115(5), Introduced=11(3)	~1 Citation / Observation ID	2.96, 0.085	0.73±[-0.25,1.72], df=6, t=1.82, p=0.119	σ^2_{null} =0.36, σ^2_{model} =0.28	I^2_{null} =65.85, I^2_{model} =60.01	R^2 =13.49, R^{2*} =3.94
Herbivore nativeness	Native=151(14), Introduced=11(3)	~1 Citation / Observation ID, ~Time Series Experiment ID	1.49, 0.222	0.45±[1.23,-0.33], df=15, t=-1.23, p=0.236	σ^2_{null} =0.22, σ^2_{model} =0.2	I^2_{null} =72, I^2_{model} =70.18	R^2 =4.8, R^{2*} =1.28
Vertebrates - Small Mammal Abundance							
Africa Comparison	Intact Africa=115(5), Introduced=11(3)	~1 Citation / Observation ID	2.96, 0.085	0.73±[-0.25,1.72], df=6, t=1.82, p=0.119	σ^2_{null} =0.36, σ^2_{model} =0.28	I^2_{null} =65.85, I^2_{model} =60.01	R^2 =13.49, R^{2*} =3.94
Herbivore nativeness	Native=137(11), Introduced=11(3)	~1 Citation / Observation ID	3.13, 0.077	0.61±[1.34,-0.12], df=12, t=-1.81, p=0.095	σ^2_{null} =0.2, σ^2_{model} =0.16	I^2_{null} =65.52, I^2_{model} =61.14	R^2 =13.59, R^{2*} =2.55
Vertebrates - Vertebrate Abundance							
Africa Comparison	Intact Africa=121(9), Introduced=37(7)	~1 Citation / Species ID / Observation ID	0.02, 0.874	0.04±[-0.5,0.58], df=14, t=0.16, p=0.876	σ^2_{null} =0.46, σ^2_{model} =0.46	I^2_{null} =78, I^2_{model} =77.66	R^2 =0.06, R^{2*} =0.02

Supplementary Data 1. Final model results and statistics for all main text models. Sample sizes are given as number of observations with number of studies in parentheses. Log-likelihood ratio tests (LRT) and p values in comparison to intercept-only null models are provided. Total model variance (σ^2), total unexplained heterogeneity (I^2) and R^2 are provided. Note that some some models had extremely low heterogeneity (particularly Root Biomass), leading to R^2 of 100%. We thus calculated an alternative R^{2*} , which is the proportion of total variance in y explained by moderator (see Methods). Contrasts between factors (e.g., nativeness levels) were conducted with two-tailed tests with the t-distribution. Contrast estimates (e.g., difference between nativeness levels) are provided along with 95% confidence intervals, degrees of freedom, t-test statistic, and p-values.

	N articles (n observations)	Random effect	Comparison to intercept- only (LRT, p)	Contrast±95%CIs	Total variance	Unexplained heterogeneity	Explained variance
Herbivore nativeness	Native=251(27), Introduced=37(7)	~1 Citation / Species ID / Observation ID	1.53, 0.216	-0.24±[0.14,-0.61], df=32, t=1.29, p=0.206	σ^2_{null} =0.35, σ^2_{model} =0.34	I^2_{null} =83.26, I^2_{model} =82.81	R^2 =1.8, R^{2*} =0.62
Invasive	Native=251(27), Invasive=30(5)	~1 Citation / Species ID / Observation ID	1.15, 0.283	-0.23±[0.19,-0.66], df=30, t=1.13, p=0.269	σ^2_{null} =0.36, σ^2_{model} =0.35	I^2_{null} =83.69, I^2_{model} =83.32	R^2 =1.46, R^{2*} =0.51
Vertebrates - Vertebrate Diversity							
Africa Comparison	Intact Africa=14(3), Introduced=19(3)	~1 Citation / Observation ID	1.62, 0.203	-0.28±[-0.9,0.33], df=4, t=-1.28, p=0.268	σ^2_{null} =0.26, σ^2_{model} =0.24	I^2_{null} =83.47, I^2_{model} =81.89	R^2 =7.79, R^{2*} =1.1
Herbivore nativeness	Native=57(11), Introduced=19(3)	~1 Citation / Observation ID	2.95, 0.086	-0.16±[0.04,-0.36], df=12, t=1.79, p=0.099	σ^2_{null} =0.06, σ^2_{model} =0.05	I^2_{null} =62.62, I^2_{model} =57.76	R^2 =9.13, R^{2*} =0.52