

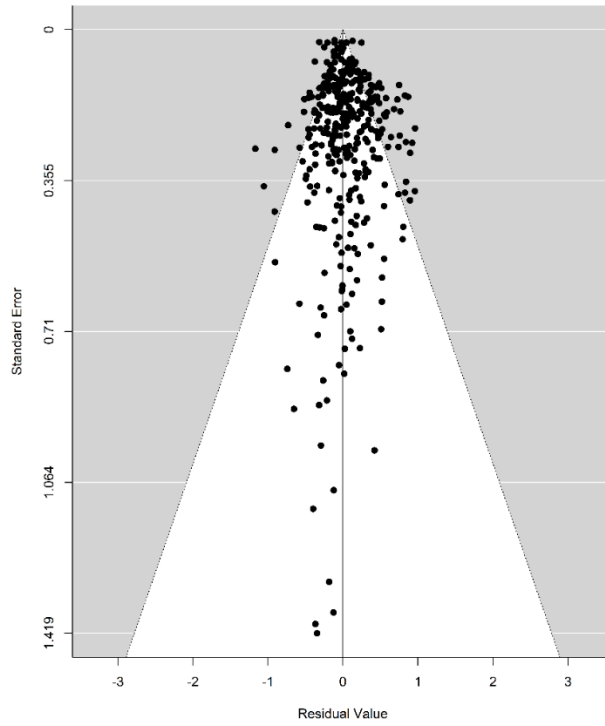
**Supporting Information.** Qiu, J., and B.J. Cardinale. 2020. Scaling up biodiversity–ecosystem function relationships across space and over time. *Ecology*.

## Appendix S2

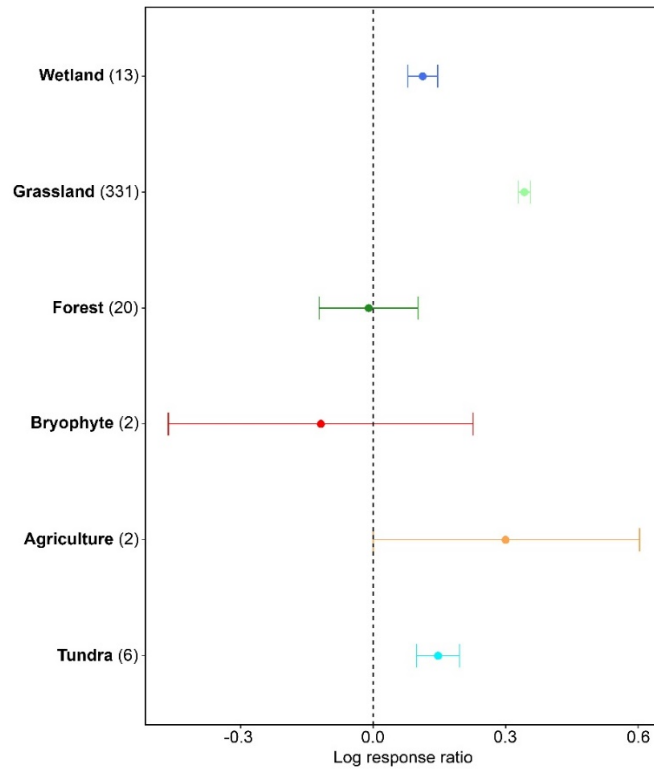
### Non-independence of effect sizes, publication bias, and heterogeneity of effect sizes

Non-independence of effect sizes and publication bias (i.e., selective publication of significant over non-significant results, and studies with larger sample size have more power to detect significant effects) are the two most frequent issues in the literature synthesis (Koricheva et al. 2013; Koricheva and Gurevitch 2014). The screening and filter criteria, and determination of data inclusion as described in the method section are intended to minimize potential non-independence of effect sizes. To test potential publication bias, we first analyzed the correlations between standardized effect size (i.e., log ratio,  $LR_{net}$ ) and sample size across studies, and found non-significant results ( $P = 0.32$ ), suggesting that large effect sizes in one direction were not more likely to be published than small effect sizes. We also generated a funnel plot using ‘funnel’ function in the ‘*metafor*’ package (Viechtbauer 2010), with spatial and temporal scales as moderators (**Appendix S2: Fig. S1**). The funnel plot appears symmetrical, which is expected in the absence of a sampling bias (Palmer 1999; Sterne and Egger 2001). We also examined the heterogeneity of effect sizes across ecosystem types (**Appendix S2: Fig. S2**), and found that most studies showed consistent positive diversity effects, except for forests and bryophytes that showed more variable results. Collectively, these analyses show no evidence of publication bias in the dataset used for the current study.

**Appendix S2: Figure S1.** Funnel plot of the effect size of plant species richness on biomass production for the full dataset ( $N= 374$ ).



**Appendix S2: Figure S2.** Plant diversity effects on biomass production (indicated by log response ratio on x-axis), summarized by ecosystem types. Number in parentheses (on y-axis) indicates the total number of cases studies included in the dataset for each ecosystem type.



## References

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