

Description of Additional Supplementary Files

Supplementary Data 1. **Dataset.** Variable values for each population, including normalized genetic diversity (GDP_norm, response variable), methodological, geographic, phylogenetic, (past) climate and life history information. Please find a detailed description of each variable in the Meta-data sheet (Supplementary Data 3).

Supplementary Data 2. **Studies.** Studies from which the expected heterozygosity and geographical coordinates were extracted.

Supplementary Data 3. **Meta-data.** Source of the information is provided where applicable ("Study" refers to the original peer-reviewed papers that were collected for this quantitative review).

Supplementary Data 4. **Kingdom Model Output.** Outcomes, explained variance (R^2_m and R^2_c) and model fit graphs of the descriptive Kingdom model. The p-values of this linear mixed model are not corrected for multiple testing.

Supplementary Data 5. **Phylum Model Output.** Outcomes, explained variance (R^2_m and R^2_c) and model fit graphs of the descriptive Phylum model. The p-values of this linear mixed model are not corrected for multiple testing.

Supplementary Data 6. **Animal kingdom model Output.** Outcomes, explained variance (R^2_m and R^2_c) and model fit graphs of the Animal Kingdom model. The p-values of this linear mixed model are not corrected for multiple testing.

Supplementary Data 7. **Plant kingdom model Output.** Outcomes, explained variance (R^2_m and R^2_c) and model fit graphs of the Plant kingdom model. The p-values of this linear mixed model are not corrected for multiple testing.

Supplementary Data 8. **Animal dredge table.** Dredge tables showing variable estimates (0 is = no significant contribution) for all models with $\Delta AIC < 4$ to assess variable importance (see Fig.3 in main text).

Supplementary Data 9. **Plant dredge table.** Dredge tables showing variable estimates (0 is = no significant contribution) for all models with $\Delta AIC < 4$ to assess variable importance (see Fig.3 in main text).