

SI Materials and Methods: Supplementary Figures

Figure S14: Differences between the species determined by our methods to be persistent community members and species determined to be incidental or "Ephemeral." "% presence" is the proportion of years in the time series in which the species had non-zero abundance.

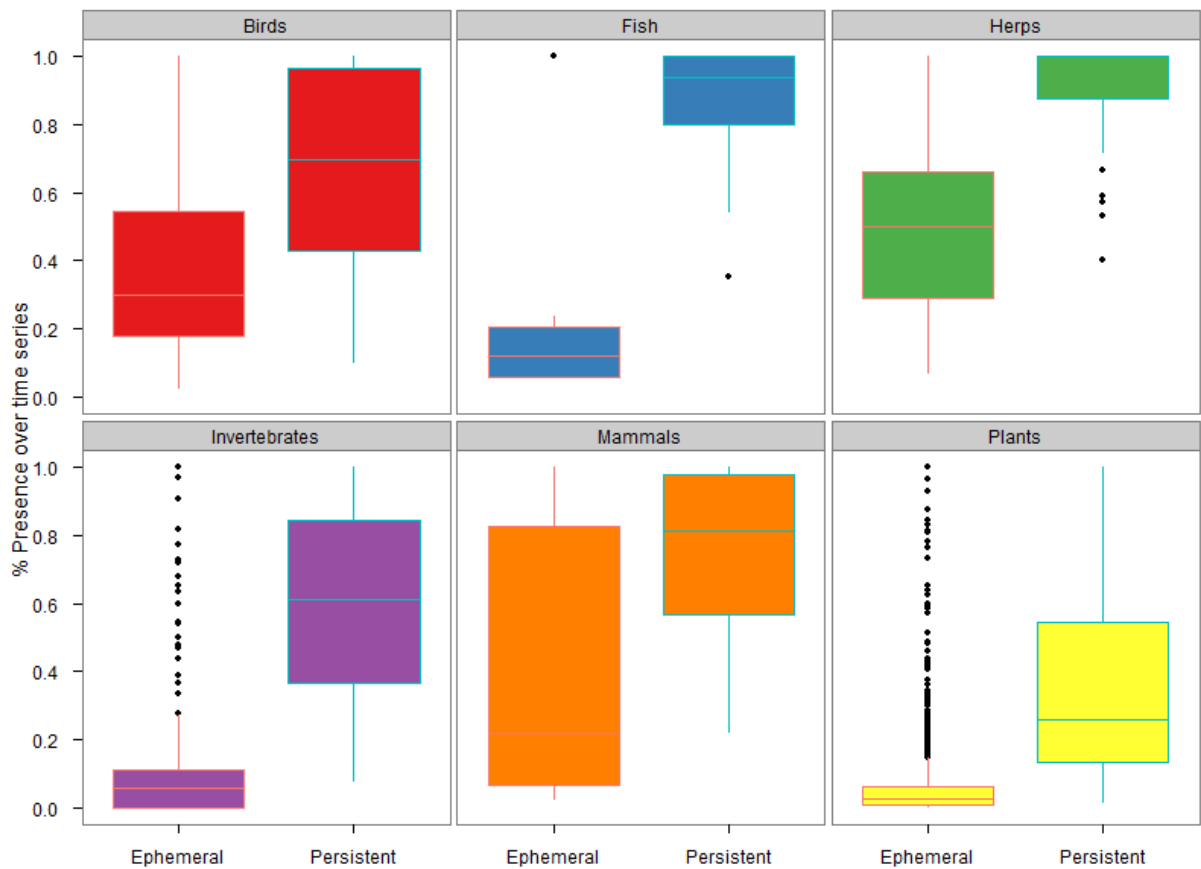
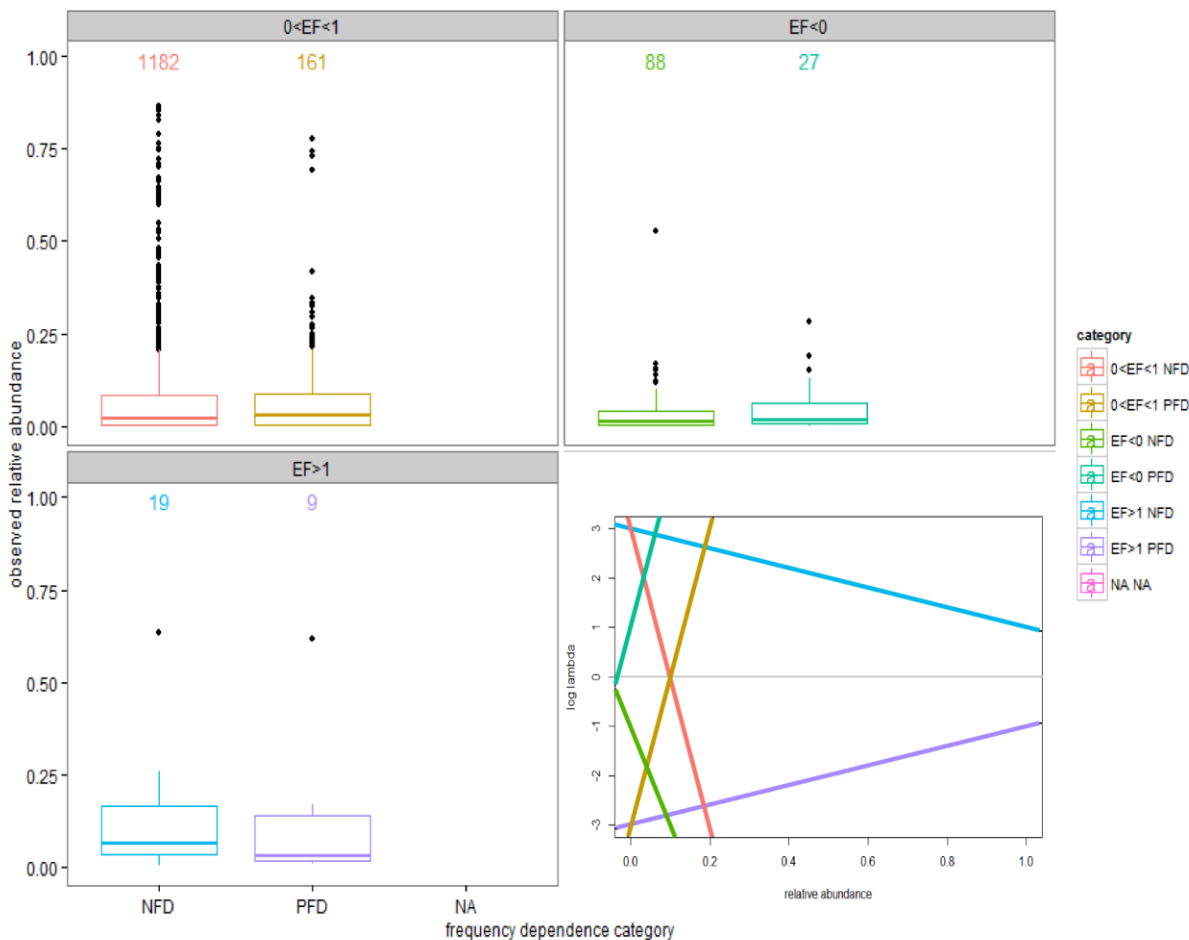
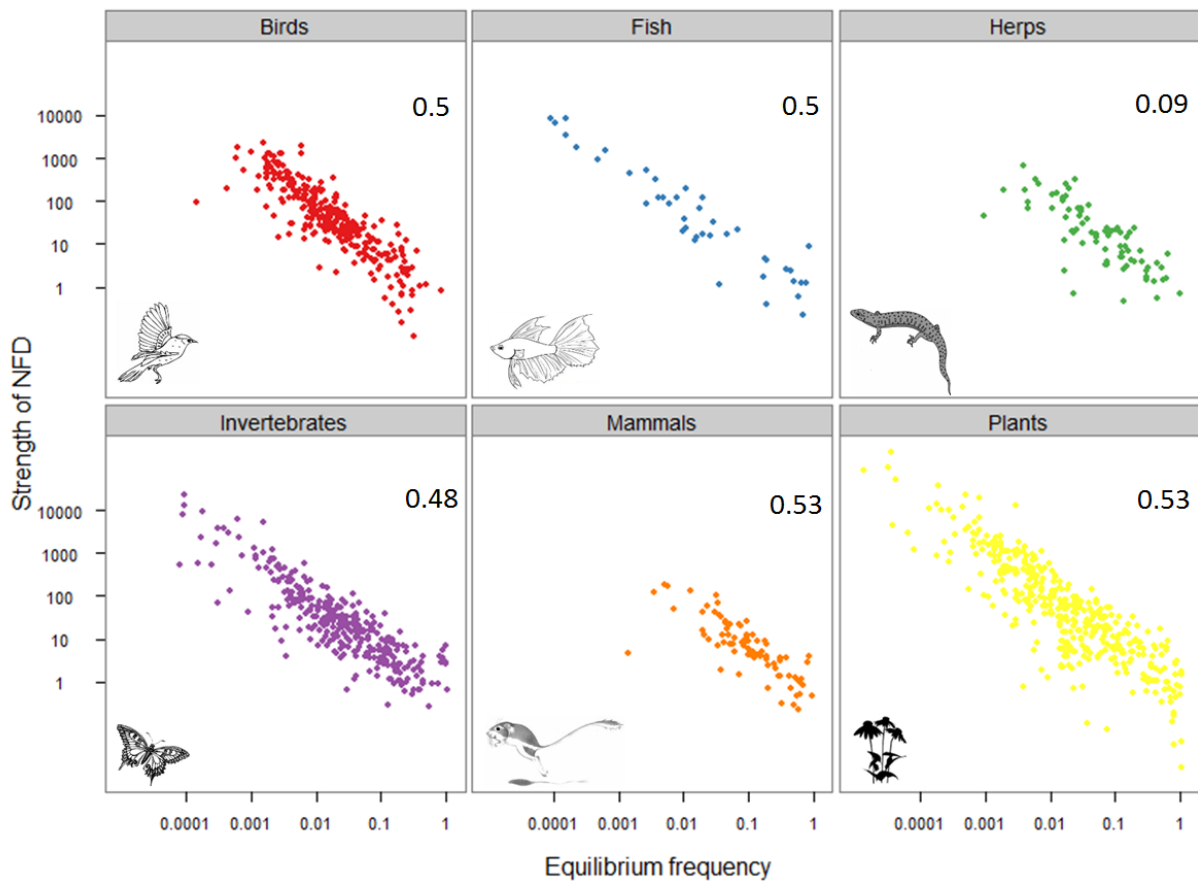


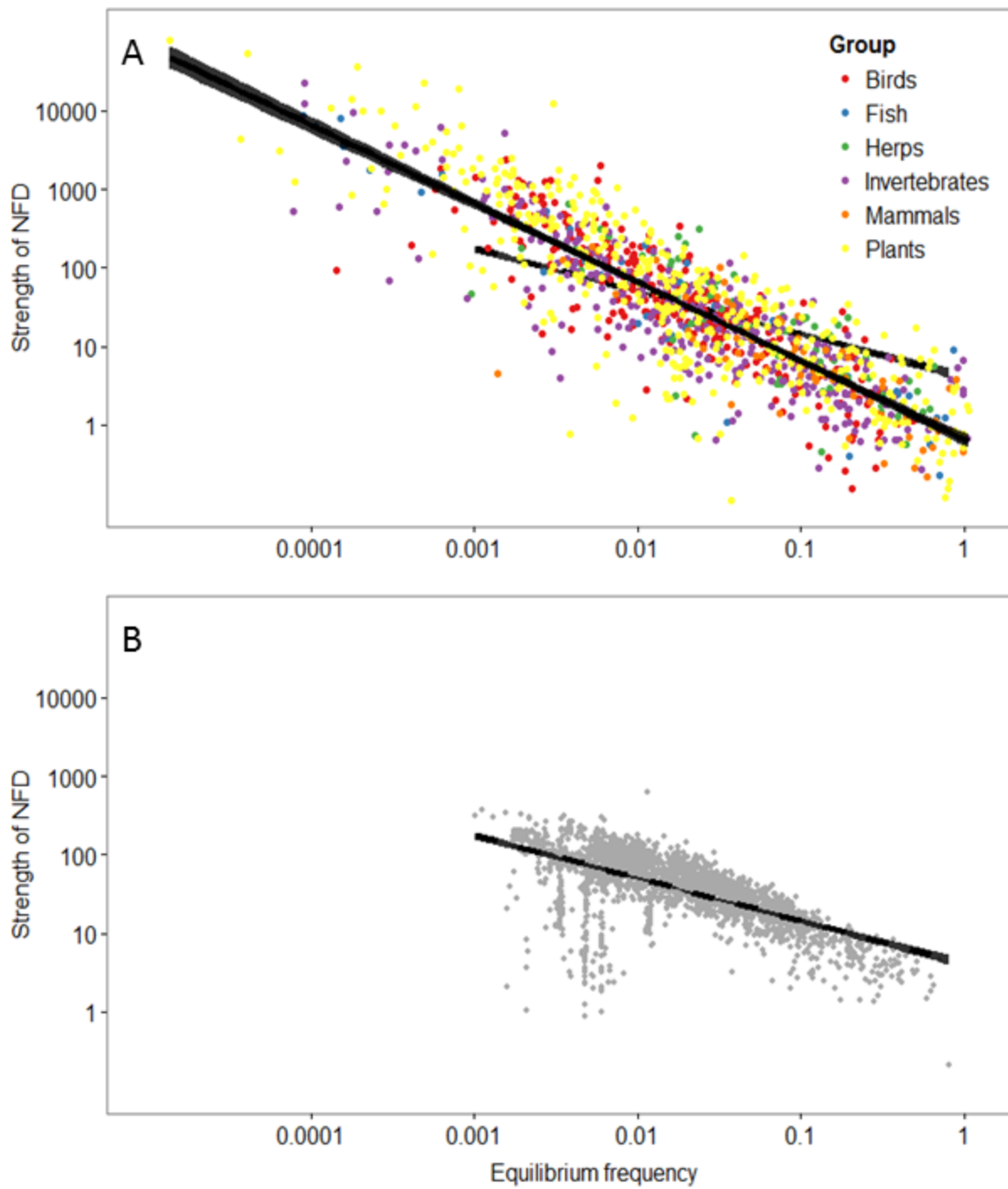
Figure S15: Number of species (and their relative abundances) determined to be persistent or ephemeral based on estimated equilibrium frequency (EF) and whether or not they are experiencing positive (PFD) or negative (NFD) frequency dependence. The fourth panel is analogous to Figure 1B in the manuscript and demonstrates how each category relates to persistence.



24 Figure S16: Results separated by group. The value in each panel is the proportion of communities in that  
 25 group that show the asymmetric NFD pattern significantly.



36 Figure S17: Relationship between a species' equilibrium frequency and the strength of its negative  
37 frequency dependence. The top panel (A) shows the results for all taxonomic groups (N=1182). The  
38 relationship between estimated equilibrium frequency and the strength of NFD (solid black line, with  
39 shaded 99% confidence intervals) is stronger than in the randomized data (dashed line, with shaded 99%  
40 confidence intervals). The bottom panel (B) shows one realization from the randomized results  
41 (N=2443), accounting for the bias in the NFD estimates, and an example of the artificial relationship this  
42 creates (dashed line, with shaded 99% confidence intervals).



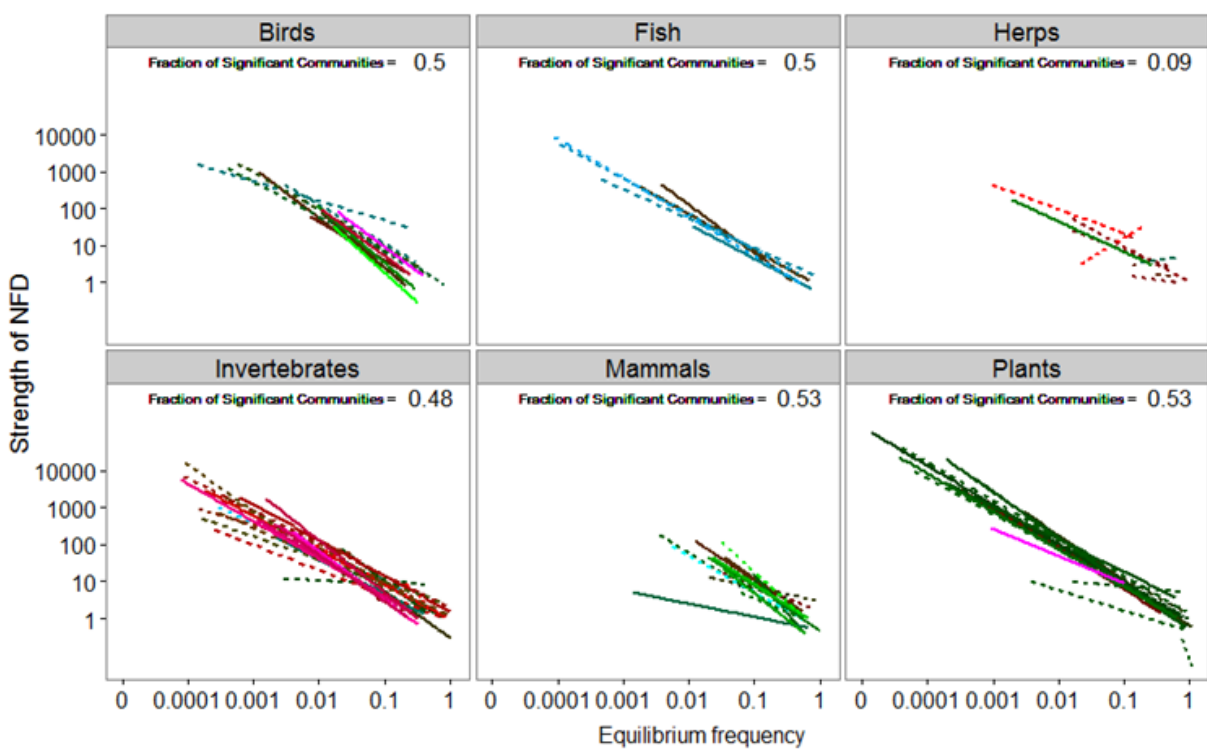
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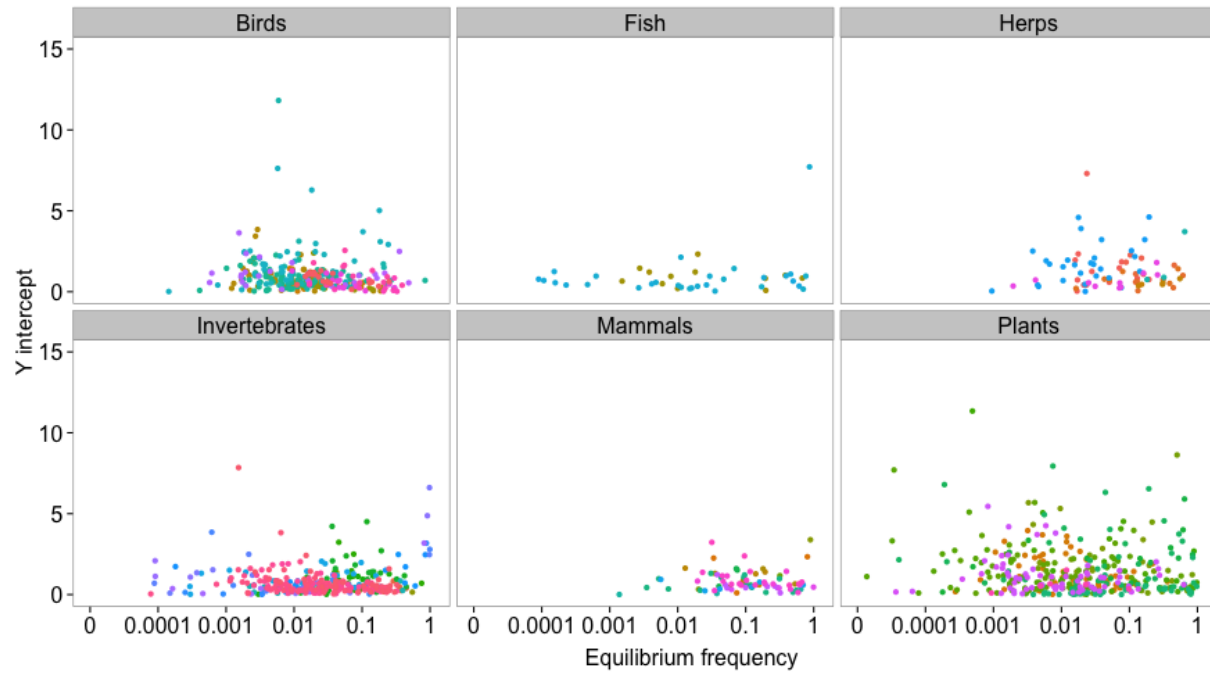
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Figure S18: Results separated by taxonomic group, showing the relationship between equilibrium frequency and strength of NFD experienced in each individual community. Results were compared to randomized data to account for bias introduced by measurement error and determine which relationships were significant (solid lines) or not (dashed lines). The value in each panel is the proportion of communities in that group with a significant asymmetric NFD pattern (each colored line is a single community).



62 Figure S19: In contrast to the strength of negative frequency dependence, there is no clear relationship  
 63 between equilibrium frequency and the maximal growth rate estimate for each species (estimated as the  
 64 y-intercept of the frequency dependence relationship). Increasing the strength of negative frequency  
 65 dependence will increase growth rates experienced by a species when it is rare. The benefit for rare  
 66 species is that they will experience larger maximal growth rates than they would, had they weaker  
 67 negative frequency dependence. This does not imply that they will necessarily have larger maximal  
 68 growth rates than their more common counterparts, as evidenced by the lack of a relationship between  
 69 equilibrium frequency and the estimate of maximal growth rate.



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