Figures

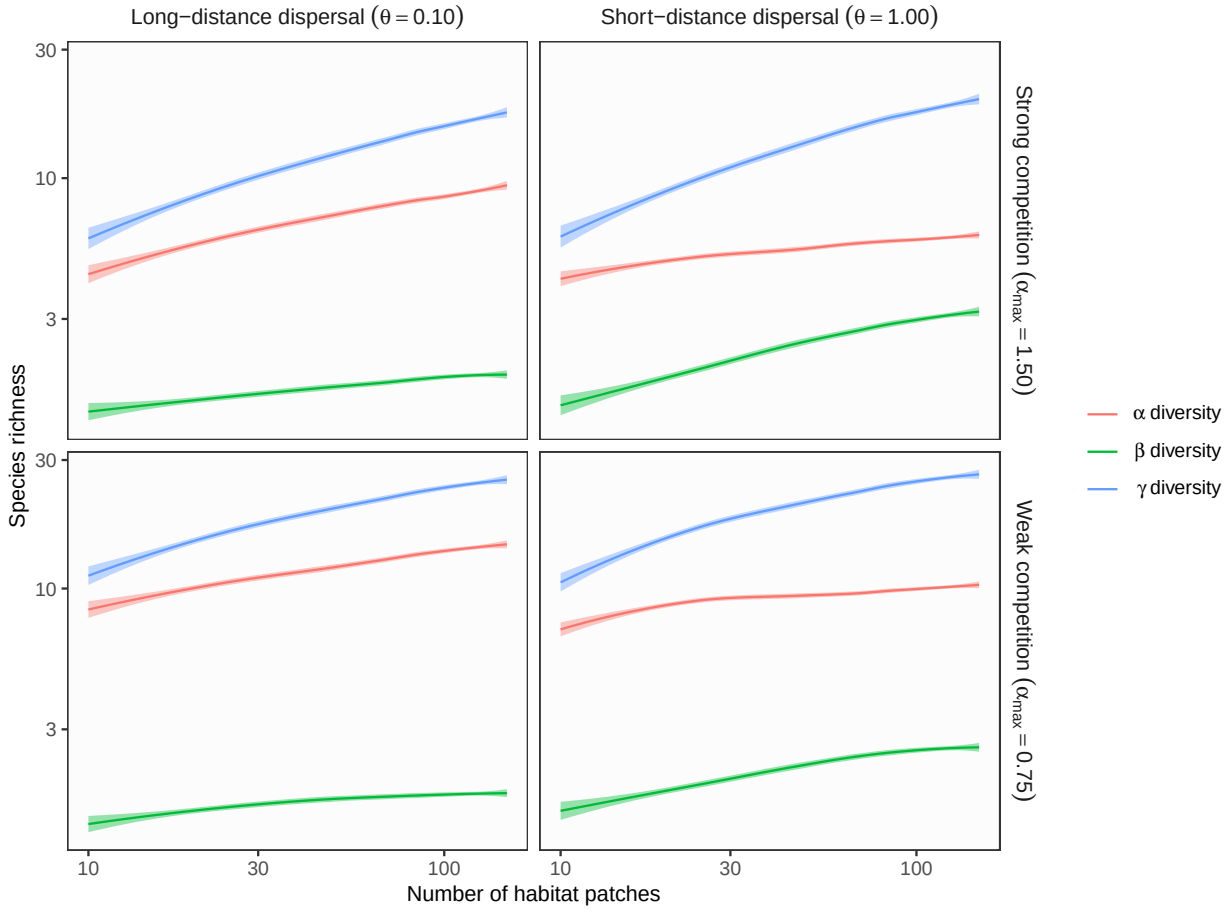

Figure 1: Theoretical predictions for ecosystem size influences (the number of habitat patches) on α, β, and γ diversity in branching networks. Lines and shades are loess curves fitted to simulated data and its 95% confidence intervals. Each panel represents different ecological scenarios under which metacommunity dynamics were simulated. Rows represent different competition strength. Competitive coefficients (α_c) were varied randomly from 0 to 1.5 (top, strong competition) or 0.75 (bottom, weak competition). Columns represent different dispersal scenarios. Two dispersal parameters were chosen to simulate scenarios with long-distance (the rate parameter of an exponential dispersal kernel $\theta = 0.10$) and short-distance dispersal ($\theta = 1.0$). In this simulation, environmental variability among headwaters (i.e., the most upstream patches), which is expressed as the standard deviation of a normal distribution ($\sigma_h = 1.0$), was greater than that of local environmental noise occurring at each habitat patch ($\sigma_l = 0.01$). Dispersal probability p_d was 0.01 for all the scenarios.