

## Appendix 1.

### Effects of initial species richness on final species diversity and abundance

#### Final species richness

In model 1, except with very small niche breadths ( $NB = 0.05$ ) and potential genotypic ranges ( $PGR = 0.1$ ), final species richness increases monotonically with initial species richness (Fig. 1), such that any effect of initial species richness (i.e. what was varied in each set of simulations) on final genotypic richness would translate into a diversity-diversity relationship at the end of the simulations.

In model 2, final species richness increased monotonically under all parameter combinations explored (Fig. 2).

#### Focal species abundance

In model 1, the effect of initial species richness on the focal species' abundance (Fig. 3) closely mirrored the results for genotypic richness (Fig. 2 in main text). Two results mentioned in the main text were, first, very low focal species abundance under facilitation and low species richness due to strong positive feedbacks and initially high frequency of the few species (Fig. 3b), and second, under facilitation with low PGR strong facilitation among the genotypes drives them to very high abundance, at the expense of the other species in the community (Fig. 3b).

In model 2, the effect of initial species richness on the focal species' abundance (Fig. 4) was negative under all parameter combinations explored. This effect was relatively weak with large niche breadths because most or all genotypes were facilitated by the species in the community.

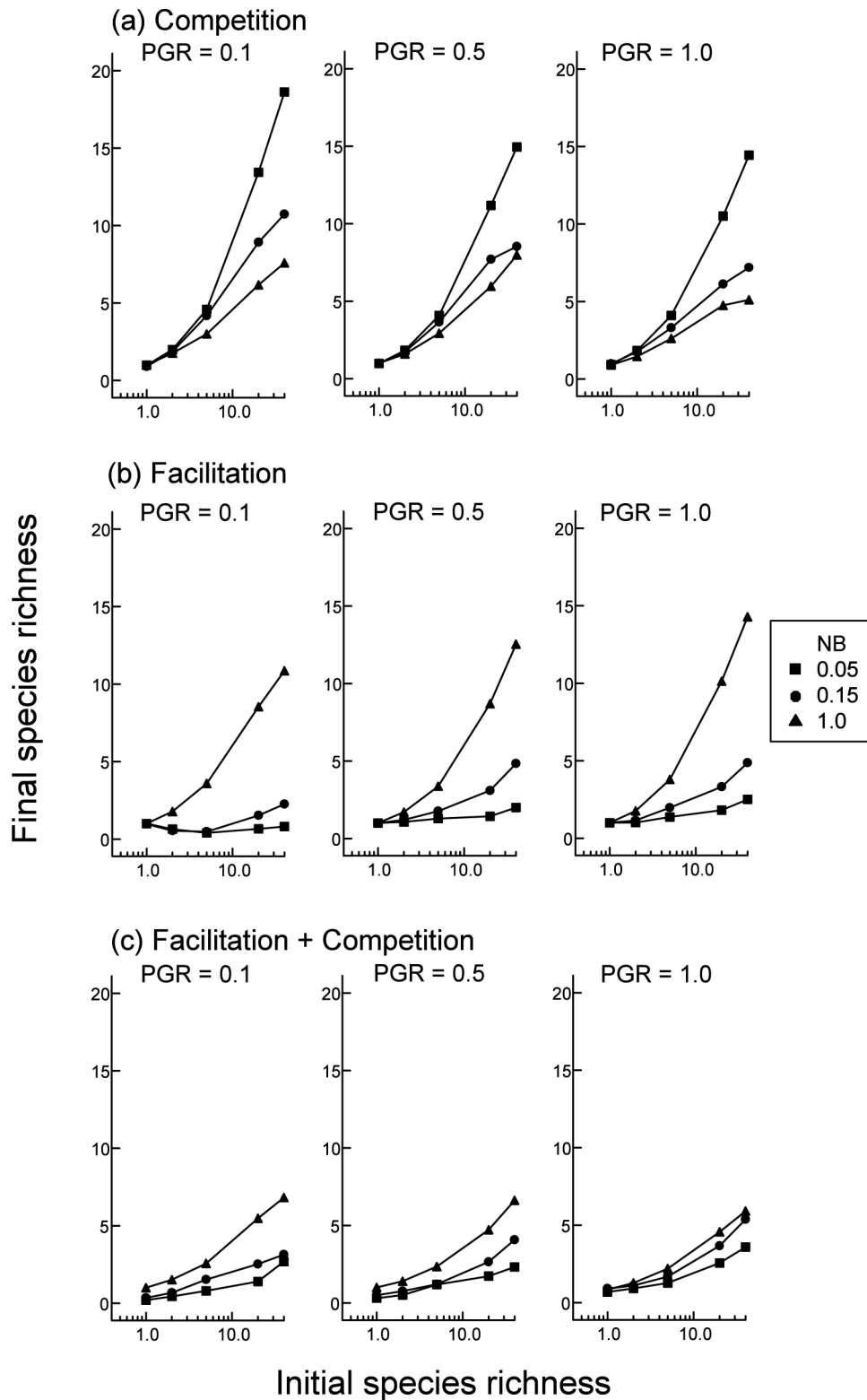


Figure A1. Effects of initial species richness on final species richness in model 1 under competition only (a), facilitation only (b), and both competition and facilitation (c), at different levels of potential genotypic range (PGR) and niche breadth (NB). Each data point represents an average across 100 simulations after 2000 time steps.

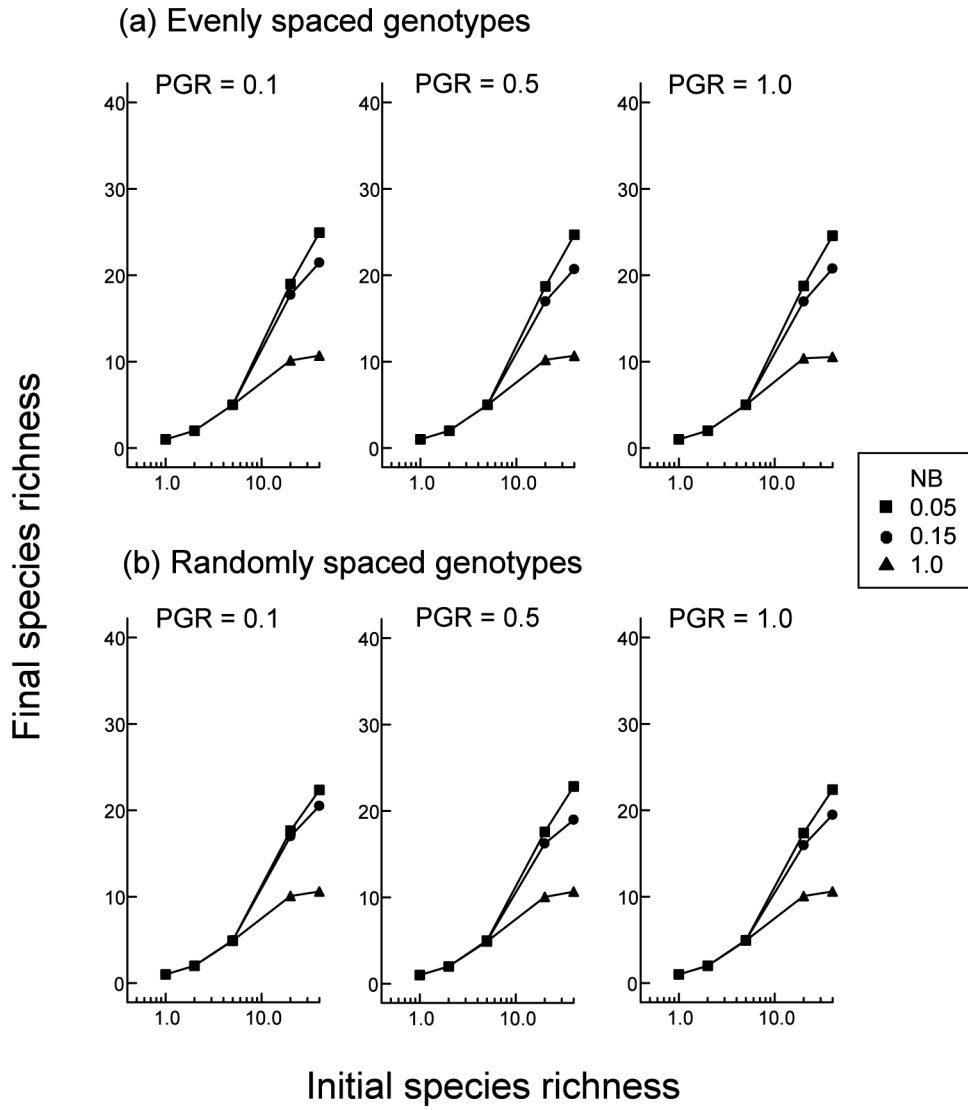


Figure A2. Effects of initial species richness on final species richness in model 2 with evenly spaced genotypes (a), or randomly spaced genotypes on the facilitation niche axis (b), at different levels of potential genotypic range (PGR) and niche breadth (NB). Each data point represents an average across 100 simulations after 2000 time steps.

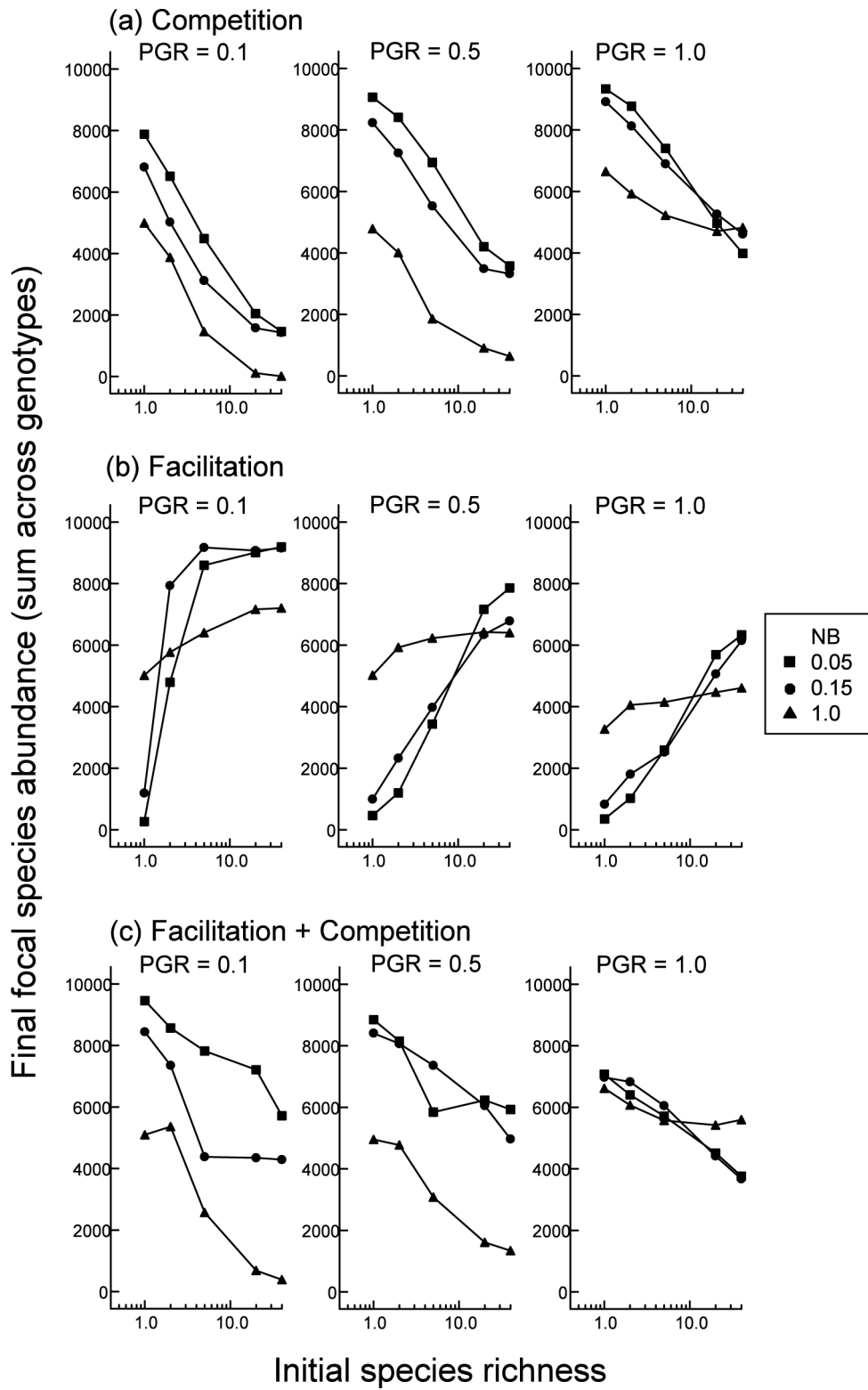


Figure A3. Effects of initial species richness on focal species abundance in model 1 under competition only (a), facilitation only (b), and both competition and facilitation (c), at different levels of potential genotypic range (PGR) and niche breadth (NB). Each data point represents an average across 100 simulations after 2000 time steps.

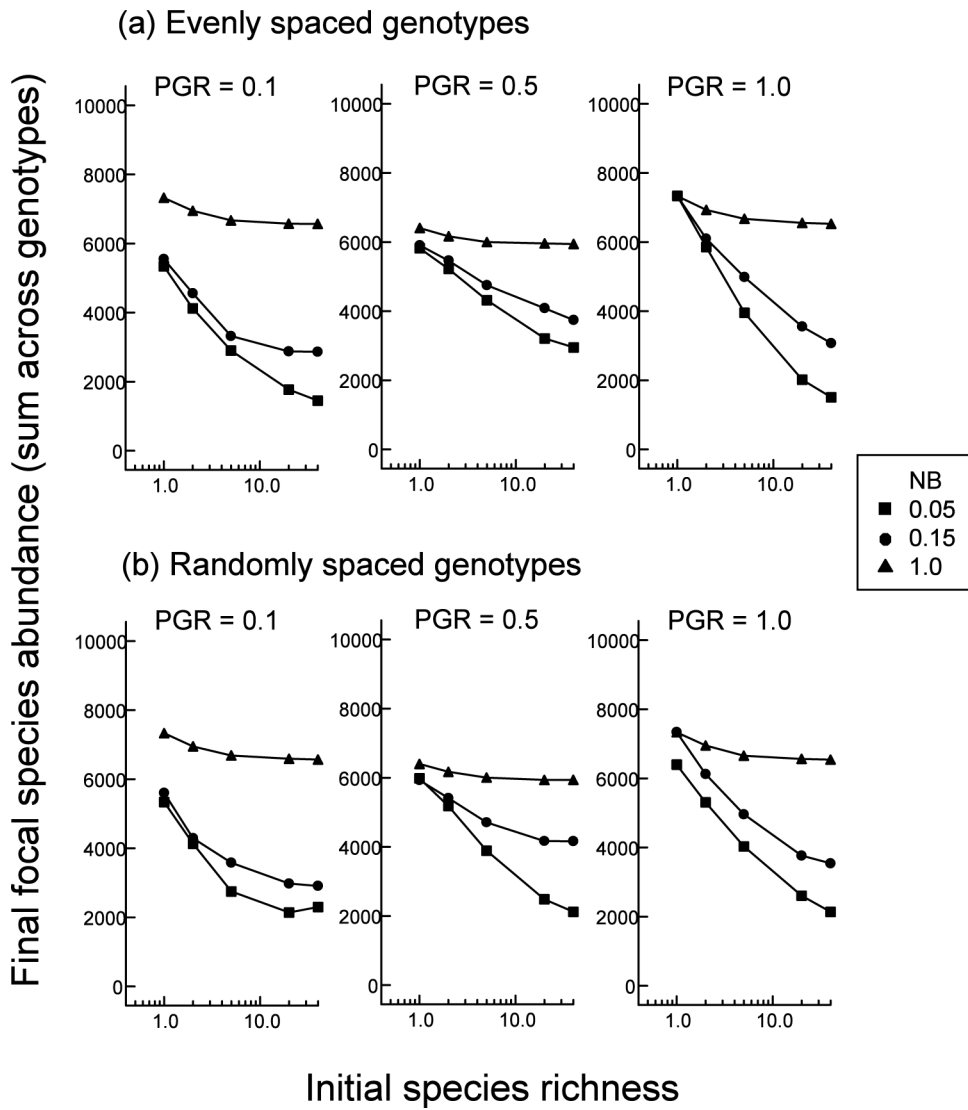


Figure A4. Effects of initial species richness on focal species abundance in model 2 with evenly spaced genotypes (a), or randomly spaced genotypes on the facilitation niche axis (b), at different levels of potential genotypic range (PGR) and niche breadth (NB). Each data point represents an average across 100 simulations after 2000 time steps.