

Table S3. Null models.

Classification of row and column constraints and weighting factors used in each of 4 null model algorithms. Constraints are applied to a binary presence-absence matrix in which rows are species, columns are cells, and entries are the presence (1) or absence (0) of a particular species in a particular cell.

Model	Rows Sums (species)	Columns Sums (cells)	Weighting factor
Fixed-fixed	Fixed	Fixed	None
Habitat	Fixed	Allowed to vary	Habitat diversity
Population	Allowed to vary	Allowed to vary	Habitat diversity and population size
Biomass	Allowed to vary	Allowed to vary	Habitat diversity and biomass