**Metadata file for tree data**

Dataset title: Estimates based on *pairwise tree interaction* models using dataset 2

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Summary: This metadata describes contents of three data files: alpha\_matrix\_2.csv, alpha\_2\_posterior.csv and pars\_2.csv. The files were generated from the stan\_fit object which is the output from fitting the tree data to the stan models. These files were subsequently used for producing figure.2 in the MS and conducting simulation studies.

File: alpha\_matrix\_2.csv

Content:

8 X 8 matrix, in which a1~a8 denotes species, e.g. the value corresponds to row a1, column a6 is , denotes species 6’s effect on species 1.

File: alpha\_2\_posterior.csv

Content:

12,000 X 64 matrix, in which each column represents the posterior distribution of each interaction coefficient, the total number of rows 12,000 means the total number sampled using Hamiltonian Monte Carlo (HMC) method.

File: pars\_2.csv

Content:

5235 X 10 matrix, in which each row represents the parameters in the model (row1 till 639) and point log likelihood of all the data points used (row 640 till the last row). Column variables see below

|  |  |
| --- | --- |
| Variable | Description |
| mean | Mean estimates based on posterior distribution |
| mean\_se | Standard error for the mean estimates |
| sd | Standard deviation of the posterior distribution |
| X2.5 | 2.5% quantile of the posterior distribution |
| X25 | 25% quantile of the posterior distribution |
| X50 | 50% quantile of the posterior distribution |
| X75 | 75% quantile of the posterior distribution |
| n\_eff | Effective sample size |
| Rhat | Convergence diagnostic, which compares the between- and within-chain estimates for model parameters. |