**Diversity Metric Summary**

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| **Metric** | **Description** | **Reference** | **R Package** | **Function** |
| Alpha diversity based on Hill numbers | Average number of species at a site. Can weight species by relative abundance. | (Jost 2007, Chao et al. 2012) | vegetarian | d() |
| Alpha (and gamma) diversity based on Renyi entropy | Takes into account both richness and evenness at a site.  exp(renyi) = Hill number | (Jost 2007) | vegan | renyi() |
| Beta diversity based on Hill numbers | Multiplicative species turnover, gives an estimate of the number of “distinct” communities in a data set. Beta = gamma / alpha | (Jost 2007, Chao et al. 2012) | vegetarian | d() |
| Gamma diversity based on Hill numbers | An estimate of the size of the regional species pool, can weight species by relative abundances. | (Jost 2007, Chao et al. 2012) | vegetarian | d() |
| Beta diversity on presence absence data, many different metrics | Measures of community composition turnover based on presence/absence data | (Koleff et al. 2003, Baselga 2010) | vegan | betadiver() |
| Alpha (and Gamma) diversity, various metrics | Shannon, Simpson, and other common diversity metrics that can be calculated for a site. | Various, see documentation in vegan | vegan | diversity() |
| Beta diversity based on distance metrics | Among site variation in species composition quantified using dissimilarity matrices | (Legendre et al. 2005, Anderson et al. 2006, Legendre and De Cáceres 2013) | vegan | vegdist(), decostand(),  betadisper() |

**Literature Cited**

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