Goal: Use truncated SBP with covariates to simultaneously perform model selection on covariates and number of groups

Model: Let be the species of individual i in location l. We assume that:

where is a latent variable indicating the group membership of individual i in location l. We assume that:

We adopt the following priors:

In relation to , we adopt a probit regression formulation of a truncated stick breaking prior:

Should I make this a t-distribution by assuming where ? This assumes that . Perhaps we should start by assuming that to avoid making this too complex too soon

#----------------------------------------

FCD’s

This implies that

I will jointly sample

For , notice that:

Taking logs, this becomes:

I will sample this using a MH algorithm. Notice that these parameters can be sampled independently for each location. Thus, we just need a community loop.

For , I can use a categorical distribution with probabilities given by:

* For :

Where

This implies that

It is important to have one for each community because, if one group is not well explained by the covariates, it doesn’t mess up the variance parameters for the other groups. This is particularly important for the later groups for which we have little data.