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:

The standard truncated stick-breaking prior (TSBP) assumes that . We want to pick such that we obtain a similar effect as the TSBP when none of the covariates are important (i.e., ). We do this through a moment matching strategy, in which:

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

FCD’s

Therefore:

where is the number of individuals in location l assigned to group k (i.e., ).

where is the number of individuals in location l assigned to groups k+1,…,K (i.e., ).

Taking logs, this becomes:

I will sample this using a MH algorithm

* For :
* For :

Where