i=point

s=species

j=replicate

Let be the occupancy status of point i for species s.

We assume that the occupancy parameters have the following prior:

where is a group indicator and is a diagonal matrix comprised of elements

Similarly, we assume that the detection parameters have the following prior:

where is a group indicator and is a diagonal matrix comprised of elements

Finally, we specify the following priors:

In this model, species can belong to different occupancy and detection groups. Furthermore, to interpret the grouping of species, it is imperative to look at the size of the diagonal elements in and . If the diagonal element for the slope associated with covariate x is small, that means that all species in that group share a similar response to x. If the diagonal element is large, that means that there is not much commonality regarding how species respond to x even if they belong to the same group.

This model clusters random-effects that are alike.

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

Full conditional distributions

* For

This implies that

* For

This implies that

* For

This implies that

* For

This implies that

* For

This implies that

* For

This implies that

* For

Taking log this becomes:

To propose a new group, we note that:

Taking log this becomes:

* For

Taking log this becomes:

To propose a new group, we note that

Taking log, this becomes

* For

This implies that

* For

This implies that