Current scheme

1. (Latent) variables
obs_i : observed cover of species *i (latent variable)*

μ_i : *mean cover of species i*

Cov_{ij} : Species *i* class cover *j* determined by cut-off values θ_j and θ_{j-1}

$Pred_i$: predicted cover of species i by traitspace/banquo

2. Parameters
2.1 Bernouilli process for zeros

φ: probability of species to be present

<u>Or</u>

a_pa, b_pa: linear modeling parameters linking the probability of presence and $Pred_i$

2.2 Species cover as a beta-distributed variable

Φ: spatial aggregation parameter

a_ab, b_ab: linear modeling parameters linking obs_i and $Pred_i$

σ : error term of the linear modeling

$$[obs_i > 0] \sim Bern.(\phi) \qquad \phi = expit(a_{pa} \times pred_i + b_{pa})$$

Obs$_i$ > 0   Obs$_i$ = 0

$$\mu_i \sim N(expit(a_{ab} \times pred_i + b_{ab}), \sigma)$$
$$obs_i \sim Beta(\mu_i \times \psi, (1 - \mu_i) \times \psi)$$

$$P(Cov_{ij} = j) = P(obs_i < \theta_j) - P(obs_i > \theta_{j-1})$$

Cover class = 0