Absolute sighting rate of fossil occurrence

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February 16, 2015

1 Methods

1.1 Fossil occurrence information

Foote and Miller data.

1.2 Hierarchical counting model

$$y_i = \text{Poisson}(u_i \lambda_i) \tag{1}$$
$$\lambda_i = \exp(\alpha_{j[i]}) \tag{2}$$
$$\alpha_j \sim \text{Normal}(\mu_{k[j]}, \sigma_j) \tag{3}$$
$$\mu_k \sim \text{Normal}(0, \sigma_k) \tag{4}$$
$$\sigma_j \sim \text{C}^+(2.5) \tag{5}$$
$$\sigma_k \sim \text{C}^+(2.5) \tag{6}$$

$$y_i = \text{Negative binomial}(u_i \mu_i, \phi_y) \tag{7}$$
$$\mu_i = \exp(\alpha_{j[i]}) \tag{8}$$
$$\phi = \text{C}^+(2.5) \tag{9}$$
$$\alpha_j \sim \text{Normal}(\mu_{k[j]}, \sigma_j) \tag{10}$$
$$\mu_k \sim \text{Normal}(0, \sigma_k) \tag{11}$$
$$\sigma_j \sim \text{C}^+(2.5) \tag{12}$$
$$\sigma_k \sim \text{C}^+(2.5) \tag{13}$$