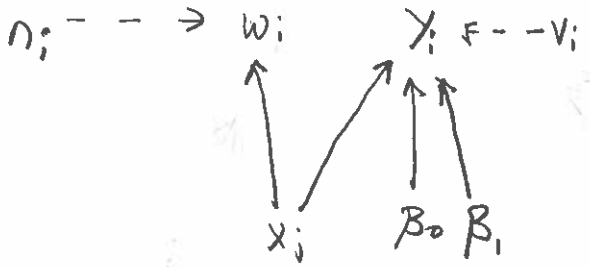

Y_i = observed number of hits of exotics on transect i;

V_i = observed number of hits of exotic and native vegetation on transect i;

x_i = unobserved, true proportion of bare ground on transect i;

Our deterministic model predicts the "probability of success" on V_i trials

β_0, β_1 = regression coefficients

w_i = observed number of hits with bare soil

n_i = total number of intercepts on transect

$$[\underline{\beta}, \underline{x} | \underline{w}, \underline{Y}] \propto \prod_{i=1}^{N} \overbrace{[Y_i | V_i, g(\beta_0, \beta_1, x_i)]}^{\text{binomial}} \overbrace{[w_i | n_i, x_i]}^{\text{binomial}}$$

$$g(\beta_0, \beta_1, x_i) = \text{inverse logit}(\beta_0 + \beta_1 x_i) \times [x_i][\beta_0][\beta_1]$$

$$Y_i \sim \text{binomial}(V_i, g(\beta_0 + \beta_1 x_i))$$
$$w_i \sim \text{binomial}(n_i, x_i)$$
$$x_i \sim \text{uniform}(0, 1)$$
$$\beta_0, \beta_1 \sim \text{normal}(0, 2.7)$$

produces flat prior of probability of success
will explain soon...
Also see Hobbs Hooten chapter