

Table S1. *Prior probability distributions used in our hierarchical Bayesian model. The symbols in the left-most column correspond to those used in the model (see Methods section, Text S1). "k" subscript refers to the transect number.*

Response	Parameter	Distribution	Mean	Precision
$a_{1,k}$	Intercept	<i>Gaussian</i>	0	10^{-4}
b_1	<i>predicted</i> disturbance	<i>Gaussian</i>	0	10^{-4}
b_2	OPEN	<i>Gaussian</i>	0	10^{-4}
b_3	SWAMP	<i>Gaussian</i>	0	10^{-4}
c_1	SMOOTH	<i>Beta</i>	0.5	12
d_1	DISTANCE	<i>Gaussian</i>	0	10^{-4}
τ_{11}	variance parameter of ENVIRONMENT ₁ prior	<i>Gamma</i>	1	10^{-2}
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$a_{2,k}$	Intercept	<i>Gaussian</i>	0	10^{-4}
b_4	OPEN	<i>Gaussian</i>	0	10^{-4}
b_5	SWAMP	<i>Gaussian</i>	0	10^{-4}
c_2	SMOOTH	<i>Beta</i>	0.5	12
d_2	DISTANCE	<i>Gaussian</i>	0	10^{-4}
τ_{21}	variance parameter of ENVIRONMENT ₂ prior	<i>Gamma</i>	1	10^{-2}