Table : Main model set - all observations (with contractions)

| Model | Velocity of isotherm shift | Dispersal rate | Parameter | Estimate | Std.Error | Conditional R2 | Marginal R2 | DF | t-value | p-value | n | K | Res.LL | AICc | ΔAICc |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum rate | Mean | Maximum | Intercept | 0.3 | 0.27 | 0.14 | 0.01 | 260 | 1.11 | 0.27 | 446 | 4 | -1287.98 | 2584.06 | 0 |
| Minimum rate | Mean | Maximum | Minimum rate | 0.22 | 0.09 | 0.14 | 0.01 | 184 | 2.57 | 0.01 | 446 | 4 | -1287.98 | 2584.06 | 0 |
| Velocity of isotherm shift | Mean | - | Intercept | 0.28 | 0.27 | 0.15 | 0.01 | 260 | 1.02 | 0.31 | 446 | 4 | -1288.04 | 2584.17 | 0.11 |
| Velocity of isotherm shift | Mean | - | Velocity of isotherm shift | 0.22 | 0.09 | 0.15 | 0.01 | 184 | 2.54 | 0.01 | 446 | 4 | -1288.04 | 2584.17 | 0.11 |
| Minimum rate | Mean | Median | Intercept | 0.32 | 0.26 | 0.15 | 0.01 | 260 | 1.23 | 0.22 | 446 | 4 | -1288.28 | 2584.66 | 0.6 |
| Minimum rate | Mean | Median | Minimum rate | 0.24 | 0.1 | 0.15 | 0.01 | 184 | 2.39 | 0.02 | 446 | 4 | -1288.28 | 2584.66 | 0.6 |
| Minimum rate | 3rd quartile | Maximum | Intercept | 0.3 | 0.27 | 0.14 | 0.01 | 260 | 1.1 | 0.27 | 446 | 4 | -1288.71 | 2585.51 | 1.45 |
| Minimum rate | 3rd quartile | Maximum | Minimum rate | 0.16 | 0.07 | 0.14 | 0.01 | 184 | 2.36 | 0.02 | 446 | 4 | -1288.71 | 2585.51 | 1.45 |
| Velocity of isotherm shift | 3rd quartile | - | Intercept | 0.26 | 0.29 | 0.14 | 0.01 | 260 | 0.89 | 0.37 | 446 | 4 | -1288.87 | 2585.84 | 1.78 |
| Velocity of isotherm shift | 3rd quartile | - | Velocity of isotherm shift | 0.16 | 0.07 | 0.14 | 0.01 | 184 | 2.28 | 0.02 | 446 | 4 | -1288.87 | 2585.84 | 1.78 |
| Minimum rate | 3rd quartile | Median | Intercept | 0.34 | 0.27 | 0.15 | 0.01 | 260 | 1.26 | 0.21 | 446 | 4 | -1289.05 | 2586.19 | 2.13 |
| Minimum rate | 3rd quartile | Median | Minimum rate | 0.18 | 0.08 | 0.15 | 0.01 | 184 | 2.12 | 0.04 | 446 | 4 | -1289.05 | 2586.19 | 2.13 |
| Potential dispersal rate and velocity of isotherm shift (additive) | Mean | Median | Intercept | 0.31 | 0.27 | 0.15 | 0.02 | 259 | 1.14 | 0.25 | 446 | 5 | -1292.55 | 2595.24 | 11.17 |
| Potential dispersal rate and velocity of isotherm shift (additive) | Mean | Median | Potential dispersal rate | 0 | 0 | 0.15 | 0.02 | 259 | -0.74 | 0.46 | 446 | 5 | -1292.55 | 2595.24 | 11.17 |
| Potential dispersal rate and velocity of isotherm shift (additive) | Mean | Median | Velocity of isotherm shift | 0.23 | 0.09 | 0.15 | 0.02 | 184 | 2.62 | 0.01 | 446 | 5 | -1292.55 | 2595.24 | 11.17 |
| Potential dispersal rate and velocity of isotherm shift (additive) | Mean | Maximum | Intercept | 0.27 | 0.27 | 0.15 | 0.01 | 259 | 1.01 | 0.32 | 446 | 5 | -1293.34 | 2596.81 | 12.75 |
| Potential dispersal rate and velocity of isotherm shift (additive) | Mean | Maximum | Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | 0.1 | 0.92 | 446 | 5 | -1293.34 | 2596.81 | 12.75 |
| Potential dispersal rate and velocity of isotherm shift (additive) | Mean | Maximum | Velocity of isotherm shift | 0.22 | 0.1 | 0.15 | 0.01 | 184 | 2.28 | 0.02 | 446 | 5 | -1293.34 | 2596.81 | 12.75 |
| Potential dispersal rate | - | Median | Intercept | 0.7 | 0.24 | 0.16 | 0 | 259 | 2.95 | 0 | 446 | 4 | -1294.41 | 2596.9 | 12.84 |
| Potential dispersal rate | - | Median | Potential dispersal rate | 0 | 0 | 0.16 | 0 | 259 | -0.35 | 0.72 | 446 | 4 | -1294.41 | 2596.9 | 12.84 |
| Potential dispersal rate | - | Maximum | Intercept | 0.57 | 0.24 | 0.16 | 0 | 259 | 2.33 | 0.02 | 446 | 4 | -1294.46 | 2597.01 | 12.95 |
| Potential dispersal rate | - | Maximum | Potential dispersal rate | 0 | 0 | 0.16 | 0 | 259 | 1.1 | 0.27 | 446 | 4 | -1294.46 | 2597.01 | 12.95 |
| Potential dispersal rate and velocity of isotherm shift (additive) | 3rd quartile | Median | Intercept | 0.29 | 0.29 | 0.15 | 0.01 | 259 | 0.99 | 0.32 | 446 | 5 | -1293.46 | 2597.06 | 13 |
| Potential dispersal rate and velocity of isotherm shift (additive) | 3rd quartile | Median | Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | -0.63 | 0.53 | 446 | 5 | -1293.46 | 2597.06 | 13 |
| Potential dispersal rate and velocity of isotherm shift (additive) | 3rd quartile | Median | Velocity of isotherm shift | 0.17 | 0.07 | 0.15 | 0.01 | 184 | 2.33 | 0.02 | 446 | 5 | -1293.46 | 2597.06 | 13 |
| Potential dispersal rate and velocity of isotherm shift (additive) | 3rd quartile | Maximum | Intercept | 0.25 | 0.29 | 0.15 | 0.01 | 259 | 0.86 | 0.39 | 446 | 5 | -1294.14 | 2598.43 | 14.37 |
| Potential dispersal rate and velocity of isotherm shift (additive) | 3rd quartile | Maximum | Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | 0.32 | 0.75 | 446 | 5 | -1294.14 | 2598.43 | 14.37 |
| Potential dispersal rate and velocity of isotherm shift (additive) | 3rd quartile | Maximum | Velocity of isotherm shift | 0.15 | 0.08 | 0.15 | 0.01 | 184 | 2.01 | 0.05 | 446 | 5 | -1294.14 | 2598.43 | 14.37 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | Mean | Median | Intercept | 0.3 | 0.28 | 0.15 | 0.02 | 259 | 1.07 | 0.29 | 446 | 6 | -1297.59 | 2607.36 | 23.3 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | Mean | Median | Potential dispersal rate | 0 | 0.01 | 0.15 | 0.02 | 259 | 0.04 | 0.97 | 446 | 6 | -1297.59 | 2607.36 | 23.3 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | Mean | Median | Velocity of isotherm shift | 0.25 | 0.1 | 0.15 | 0.02 | 183 | 2.62 | 0.01 | 446 | 6 | -1297.59 | 2607.36 | 23.3 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | Mean | Median | Potential dispersal rate:velocity of isotherm shift | 0 | 0 | 0.15 | 0.02 | 183 | -0.46 | 0.64 | 446 | 6 | -1297.59 | 2607.36 | 23.3 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | 3rd quartile | Median | Intercept | 0.28 | 0.29 | 0.15 | 0.01 | 259 | 0.94 | 0.35 | 446 | 6 | -1298.55 | 2609.3 | 25.24 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | 3rd quartile | Median | Potential dispersal rate | 0 | 0.01 | 0.15 | 0.01 | 259 | 0 | 1 | 446 | 6 | -1298.55 | 2609.3 | 25.24 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | 3rd quartile | Median | Velocity of isotherm shift | 0.18 | 0.08 | 0.15 | 0.01 | 183 | 2.27 | 0.02 | 446 | 6 | -1298.55 | 2609.3 | 25.24 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | 3rd quartile | Median | Potential dispersal rate:velocity of isotherm shift | 0 | 0 | 0.15 | 0.01 | 183 | -0.27 | 0.79 | 446 | 6 | -1298.55 | 2609.3 | 25.24 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | Mean | Maximum | Intercept | 0.26 | 0.28 | 0.15 | 0.01 | 259 | 0.91 | 0.36 | 446 | 6 | -1299.72 | 2611.62 | 27.56 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | Mean | Maximum | Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | 0.22 | 0.82 | 446 | 6 | -1299.72 | 2611.62 | 27.56 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | Mean | Maximum | Velocity of isotherm shift | 0.23 | 0.1 | 0.15 | 0.01 | 183 | 2.17 | 0.03 | 446 | 6 | -1299.72 | 2611.62 | 27.56 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | Mean | Maximum | Potential dispersal rate:velocity of isotherm shift | 0 | 0 | 0.15 | 0.01 | 183 | -0.2 | 0.84 | 446 | 6 | -1299.72 | 2611.62 | 27.56 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | 3rd quartile | Maximum | Intercept | 0.25 | 0.3 | 0.15 | 0.01 | 259 | 0.84 | 0.4 | 446 | 6 | -1300.69 | 2613.56 | 29.5 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | 3rd quartile | Maximum | Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | 0.12 | 0.9 | 446 | 6 | -1300.69 | 2613.56 | 29.5 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | 3rd quartile | Maximum | Velocity of isotherm shift | 0.15 | 0.08 | 0.15 | 0.01 | 183 | 1.83 | 0.07 | 446 | 6 | -1300.69 | 2613.56 | 29.5 |
| Potential dispersal rate and velocity of isotherm shift (interactive) | 3rd quartile | Maximum | Potential dispersal rate:velocity of isotherm shift | 0 | 0 | 0.15 | 0.01 | 183 | 0.06 | 0.96 | 446 | 6 | -1300.69 | 2613.56 | 29.5 |

| Rank | Model type | Velocity of  isotherm shift | Dispersal distance | Parameter | Estimate | Std. Error | Conditional R2 | Marginal R2 | DF | t-value | p-value | n | K | Res.LL | AICc | ΔAICc |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Minimum rate | Mean | Maximum | Intercept | 0.3 | 0.27 | 0.14 | 0.01 | 260 | 1.11 | 0.27 | 446 | 4 | -1287.98 | 2584.06 | 0 |
| Minimum rate | 0.22 | 0.09 | 0.14 | 0.01 | 184 | 2.57 | 0.01 | 446 | 4 | -1287.98 | 2584.06 | 0 |
| 2 | Velocity of isotherm shift | Mean | - | Intercept | 0.28 | 0.27 | 0.15 | 0.01 | 260 | 1.02 | 0.31 | 446 | 4 | -1288.04 | 2584.17 | 0.11 |
| Velocity of isotherm shift | 0.22 | 0.09 | 0.15 | 0.01 | 184 | 2.54 | 0.01 | 446 | 4 | -1288.04 | 2584.17 | 0.11 |
| 3 | Minimum rate | Mean | Median | Intercept | 0.32 | 0.26 | 0.15 | 0.01 | 260 | 1.23 | 0.22 | 446 | 4 | -1288.28 | 2584.66 | 0.6 |
| Minimum rate | 0.24 | 0.1 | 0.15 | 0.01 | 184 | 2.39 | 0.02 | 446 | 4 | -1288.28 | 2584.66 | 0.6 |
| 4 | Minimum rate | 3rd quartile | Maximum | Intercept | 0.3 | 0.27 | 0.14 | 0.01 | 260 | 1.1 | 0.27 | 446 | 4 | -1288.71 | 2585.51 | 1.45 |
| Minimum rate | 0.16 | 0.07 | 0.14 | 0.01 | 184 | 2.36 | 0.02 | 446 | 4 | -1288.71 | 2585.51 | 1.45 |
| 5 | Velocity of isotherm shift | 3rd quartile | - | Intercept | 0.26 | 0.29 | 0.14 | 0.01 | 260 | 0.89 | 0.37 | 446 | 4 | -1288.87 | 2585.84 | 1.78 |
|  | - | Velocity of isotherm shift | 0.16 | 0.07 | 0.14 | 0.01 | 184 | 2.28 | 0.02 | 446 | 4 | -1288.87 | 2585.84 | 1.78 |
| 6 | Minimum rate | 3rd quartile | Median | Intercept | 0.34 | 0.27 | 0.15 | 0.01 | 260 | 1.26 | 0.21 | 446 | 4 | -1289.05 | 2586.19 | 2.13 |
| Minimum rate | 0.18 | 0.08 | 0.15 | 0.01 | 184 | 2.12 | 0.04 | 446 | 4 | -1289.05 | 2586.19 | 2.13 |
| 7 | Potential dispersal rate: additive | Mean | Median | Intercept | 0.31 | 0.27 | 0.15 | 0.02 | 259 | 1.14 | 0.25 | 446 | 5 | -1292.55 | 2595.24 | 11.17 |
| Potential dispersal rate | 0 | 0 | 0.15 | 0.02 | 259 | -0.74 | 0.46 | 446 | 5 | -1292.55 | 2595.24 | 11.17 |
| Velocity of isotherm shift | 0.23 | 0.09 | 0.15 | 0.02 | 184 | 2.62 | 0.01 | 446 | 5 | -1292.55 | 2595.24 | 11.17 |
| 8 | Potential dispersal rate: additive | Mean | Maximum | Intercept | 0.27 | 0.27 | 0.15 | 0.01 | 259 | 1.01 | 0.32 | 446 | 5 | -1293.34 | 2596.81 | 12.75 |
| Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | 0.1 | 0.92 | 446 | 5 | -1293.34 | 2596.81 | 12.75 |
| Velocity of isotherm shift | 0.22 | 0.1 | 0.15 | 0.01 | 184 | 2.28 | 0.02 | 446 | 5 | -1293.34 | 2596.81 | 12.75 |
| 9 | Potential dispersal rate | - | Median | Intercept | 0.7 | 0.24 | 0.16 | 0 | 259 | 2.95 | 0 | 446 | 4 | -1294.41 | 2596.9 | 12.84 |
|  |  | Potential dispersal rate | 0 | 0 | 0.16 | 0 | 259 | -0.35 | 0.72 | 446 | 4 | -1294.41 | 2596.9 | 12.84 |
| 10 | Potential dispersal rate | - | Maximum | Intercept | 0.57 | 0.24 | 0.16 | 0 | 259 | 2.33 | 0.02 | 446 | 4 | -1294.46 | 2597.01 | 12.95 |  |
|  | Potential dispersal rate | 0 | 0 | 0.16 | 0 | 259 | 1.1 | 0.27 | 446 | 4 | -1294.46 | 2597.01 | 12.95 |  |
| 11 | Potential dispersal rate: additive | 3rd quartile | Median | Intercept | 0.29 | 0.29 | 0.15 | 0.01 | 259 | 0.99 | 0.32 | 446 | 5 | -1293.46 | 2597.06 | 13 |  |
|  | Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | -0.63 | 0.53 | 446 | 5 | -1293.46 | 2597.06 | 13 |  |
|  |  |  |  | Velocity of isotherm shift | 0.17 | 0.07 | 0.15 | 0.01 | 184 | 2.33 | 0.02 | 446 | 5 | -1293.46 | 2597.06 | 13 |  |
| 12 | Potential dispersal rate: additive | 3rd quartile | Maximum | Intercept | 0.25 | 0.29 | 0.15 | 0.01 | 259 | 0.86 | 0.39 | 446 | 5 | -1294.14 |  |  |  |
|  |  | Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | 0.32 | 0.75 | 446 | 5 | -1294.14 | 2598.43 | 14.37 |  |
|  |  | Velocity of isotherm shift | 0.15 | 0.08 | 0.15 | 0.01 | 184 | 2.01 | 0.05 | 446 | 5 | -1294.14 | 2598.43 | 14.37 |  |
| 13 | Potential dispersal rate: interactive | Mean | Median | Intercept | 0.3 | 0.28 | 0.15 | 0.02 | 259 | 1.07 | 0.29 | 446 | 6 | -1297.59 | 2607.36 | 23.3 |  |
|  |  | Potential dispersal rate | 0 | 0.01 | 0.15 | 0.02 | 259 | 0.04 | 0.97 | 446 | 6 | -1297.59 | 2607.36 | 23.3 |  |
|  |  | Velocity of isotherm shift | 0.25 | 0.1 | 0.15 | 0.02 | 183 | 2.62 | 0.01 | 446 | 6 | -1297.59 | 2607.36 | 23.3 |  |
|  |  | Potential dispersal rate:velocity of isotherm shift | 0 | 0 | 0.15 | 0.02 | 183 | -0.46 | 0.64 | 446 | 6 | -1297.59 | 2607.36 | 23.3 |  |
| 14 | Potential dispersal rate: interactive | 3rd quartile | Median | Intercept | 0.28 | 0.29 | 0.15 | 0.01 | 259 | 0.94 | 0.35 | 446 | 6 | -1298.55 | 2609.3 | 25.24 |  |
|  |  | Potential dispersal rate | 0 | 0.01 | 0.15 | 0.01 | 259 | 0 | 1 | 446 | 6 | -1298.55 | 2609.3 | 25.24 |  |
|  |  | Velocity of isotherm shift | 0.18 | 0.08 | 0.15 | 0.01 | 183 | 2.27 | 0.02 | 446 | 6 | -1298.55 | 2609.3 | 25.24 |  |
|  |  | Potential dispersal rate:velocity of isotherm shift | 0 | 0 | 0.15 | 0.01 | 183 | -0.27 | 0.79 | 446 | 6 | -1298.55 | 2609.3 | 25.24 |  |
| 15 | Potential dispersal rate: interactive | Mean | Maximum | Intercept | 0.26 | 0.28 | 0.15 | 0.01 | 259 | 0.91 | 0.36 | 446 | 6 | -1299.72 | 2611.62 | 27.56 |  |
|  |  | Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | 0.22 | 0.82 | 446 | 6 | -1299.72 | 2611.62 | 27.56 |  |
|  |  | Velocity of isotherm shift | 0.23 | 0.1 | 0.15 | 0.01 | 183 | 2.17 | 0.03 | 446 | 6 | -1299.72 | 2611.62 | 27.56 |  |
|  |  | Potential dispersal rate:velocity of isotherm shift | 0 | 0 | 0.15 | 0.01 | 183 | -0.2 | 0.84 | 446 | 6 | -1299.72 | 2611.62 | 27.56 |  |
| 16 | Potential dispersal rate: interactive | 3rd quartile | Maximum | Intercept | 0.25 | 0.3 | 0.15 | 0.01 | 259 | 0.84 | 0.4 | 446 | 6 | -1300.69 | 2613.56 | 29.5 |  |
|  |  | Potential dispersal rate | 0 | 0 | 0.15 | 0.01 | 259 | 0.12 | 0.9 | 446 | 6 | -1300.69 | 2613.56 | 29.5 |  |
|  |  | Velocity of isotherm shift | 0.15 | 0.08 | 0.15 | 0.01 | 183 | 1.83 | 0.07 | 446 | 6 | -1300.69 | 2613.56 | 29.5 |  |
|  |  | Potential dispersal rate:velocity of isotherm shift | 0 | 0 | 0.15 | 0.01 | 183 | 0.06 | 0.96 | 446 | 6 | -1300.69 | 2613.56 | 29.5 |  |