

Supporting Information to the paper Bagaria, G., Rodà, F., Clotet, M., Míguez, S. & Pino, J.  
 Contrasting habitat and landscape effects on the fitness of a long-lived grassland plant under forest  
 encroachment: do they provide evidence for extinction debt? *Journal of Ecology*.

**Appendix S1.** Additional information on model results.

(a) Plant frequency (LM)

|  | Estimate | SD    | t value | P-value |
|--|----------|-------|---------|---------|
| Intercept  | -4.338   | 3.804 | -1.140  | 0.26997 |
| Proportion of historical<br>grassland in the landscape | 20.773   | 5.717 | 3.633   | 0.00206 |

Residual standard error: 2.944 on 17 degrees of freedom

Multiple R-squared: 0.4371, Adjusted R-squared: 0.404

F-statistic: 13.2 on 1 and 17 DF, p-value: 0.002055

| Moran I statistic | Expectation   | Variance     | P-value |
|-------------------|---------------|--------------|---------|
| -5.555556e-02     | -5.555556e-02 | 2.168404e-18 | 0.5     |

(b) Flowering frequency (quasi-binomial GLM)

|           | Estimate | SD     | t value | P-value |
|-----------|----------|--------|---------|---------|
| Intercept | -8.6480  | 3.3197 | -2.605  | 0.01849 |
| Soil pH   | 1.3781   | 0.4513 | 3.054   | 0.00718 |

Null deviance: 109.149 on 18 degrees of freedom

Residual deviance: 67.678 on 17 degrees of freedom

| Moran I statistic | Expectation   | Variance     | P-value |
|-------------------|---------------|--------------|---------|
| -5.555556e-02     | -5.555556e-02 | 2.168404e-18 | 0.5     |

(c) Plant size (LMM)

|                    | Estimate  | SD        | df  | t value   | P-value |
|--------------------|-----------|-----------|-----|-----------|---------|
| Intercept          | 5.687705  | 0.2852333 | 309 | 19.940538 | 0.0000  |
| Current tree cover | -1.242209 | 0.4400998 | 309 | -2.822563 | 0.0051  |

AIC: 1082.723

BIC: 1097.882

Log-likelihood: -537.3613

| Moran I statistic | Expectation   | Variance     | P-value |
|-------------------|---------------|--------------|---------|
| -3.041024e-03     | -3.048780e-03 | 3.436819e-10 | 0.3378  |

(d) Stem number (LMM)

|                 | Estimate | SD         | df  | t value  | P-value |
|-----------------|----------|------------|-----|----------|---------|
| Intercept       | 3.589816 | 0.08535481 | 309 | 42.05757 | 0       |
| Individual size | 0.003369 | 0.00015209 | 309 | 22.15183 | 0       |

AIC: 772.021

BIC: 787.1808

Log-likelihood: -382.0105

| Moran I statistic | Expectation   | Variance     | P-value |
|-------------------|---------------|--------------|---------|
| -3.033349e-03     | -3.048780e-03 | 3.430932e-10 | 0.2024  |

(e) Flowers/stem (LMM)

|  | Estimate  | SD       | df  | t value   | P-value |
|--|-----------|----------|-----|-----------|---------|
| Intercept  | -3.755726 | 1.158006 | 310 | -3.243270 | 0.0013  |
| Proportion of current grassland in the landscape | -2.773862 | 0.747081 | 16  | -3.712934 | 0.0019  |
| Soil pH  | 0.411414  | 0.155588 | 16  | 2.644255  | 0.0177  |

AIC: 844.4472

BIC: 863.3817

Log-likelihood: -417.2236

| Moran I statistic | Expectation   | Variance     | P-value |
|-------------------|---------------|--------------|---------|
| -3.036444e-03     | -3.048780e-03 | 3.433048e-10 | 0.2528  |

(f) Seeds/flower (LMM)

|   | Estimate   | SD        | df  | t value   | P-value |
|---|------------|-----------|-----|-----------|---------|
| Intercept   | -1.1432156 | 0.5908315 | 300 | -1.934927 | 0.0539  |
| Current tree cover                                  | 0.6739842  | 0.3165718 | 300 | 2.129009  | 0.0341  |
| Proportion of historical grassland in the landscape | 2.3441890  | 0.8114782 | 17  | 2.888789  | 0.0102  |

AIC: 763.2412

BIC: 782.0357

Log-likelihood: -376.6206

| Moran I statistic | Expectation   | Variance     | P-value |
|-------------------|---------------|--------------|---------|
| -3.126147e-03     | -3.134796e-03 | 3.834201e-10 | 0.3293  |

(g) Aboveground/belowground biomass ratio (LMM)

|                   | Estimate   | SD        | df | t value   | P-value |
|-------------------|------------|-----------|----|-----------|---------|
| Intercept         | -0.6068609 | 0.3417234 | 23 | -1.775883 | 0.0890  |
| Tree cover change | -1.4494056 | 0.6823514 | 23 | -2.124134 | 0.0446  |

AIC: 68.35668

BIC: 73.6855

Log-likelihood: -30.17834

| Moran I statistic | Expectation   | Variance     | P-value |
|-------------------|---------------|--------------|---------|
| -3.448276e-02     | -3.448276e-02 | 6.093216e-17 | 0.5     |

(h) Branching intensity (LMM)

|           | Estimate  | SD         | df | t value  | P-value |
|-----------|-----------|------------|----|----------|---------|
| Intercept | 0.7647398 | 0.02150037 | 24 | 35.56869 | 0       |

AIC: -32.36739

BIC: -28.2655

Log-likelihood: 19.1837

| Moran I statistic | Expectation   | Variance     | P-value |
|-------------------|---------------|--------------|---------|
| -3.448276e-02     | -3.448276e-02 | 5.941428e-17 | 0.5     |

(i) Internode length (LMM)

|           | Estimate  | SD         | df | t value  | P-value |
|-----------|-----------|------------|----|----------|---------|
| Intercept | -1.112832 | 0.05138603 | 24 | -21.6563 | 0       |

AIC: 12.32768

BIC: 16.42957

Log-likelihood: -3.163842

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| Moran I statistic | Expectation   | Variance     | <i>P</i> -value |
|-------------------|---------------|--------------|-----------------|
| -3.448276e-02     | -3.448276e-02 | 6.093216e-17 | 0.5             |

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