**SUPPLEMENTAL ONLINE MATERIAL**

*Translocation protocol:* Release patches were small enough to satisfy only the immediate requirements of the translocated birds in terms of food and shelter to provide an equivalent stimulus of dispersal for all birds (Castellon and Sieving 2006). Release patch area ranged from 0.19 to 3.31 ha (mean ± sd = 1.22 ± 0.92; see Awade et al., 2017). We also controlled for the non-occurrence of conspecifics in the release patches and for the nearest neighbor patch area, which was sufficiently large to consider it as a suitable patch (i.e. > 15 ha).

*Radiotelemetry and monitoring protocol:* We attached a radio transmitter on the back of each translocated bird (Telenax model TXB-002G, 0.9 g, <5% of bird weight). The attachment was performed with non-toxic eyelash latex glue, allowing free movements of wings and legs and causing no damages to the uropygial gland. Birds were always captured in the early morning (until 6:00 -10:00 am and were then translocated and released in patches no later than 1:00 pm). Once released, we monitored birds using radio-tracking triangulation (Kenward, 2001) and at least two observers equipped with receptors (Telenax) and Yagi antennas. We obtained bird locations hourly except during the first two hours after release or after dawn, and during the last two hours before dusk, when locations were obtained every 15 min. After five days or after an inter-patch movement event, locations were obtained once a day whenever possible.

*Novel environment test protocol:* The portable experimental cage was mounted in the forest next to each capture site in the fragmented landscape or continuous forest in a quite place away from trails or any human presence. Each captured individual was placed individually in the cage, first in a small locked box inside the cage (acclimation 5-10 min) and then released into the cage in the absence of the observer. The behavior of birds was filmed for 20 minutes with a digital video camera. Films were analyzed to record behavioral variables using the program EthoLog v1.1.5 (Ottoni 1999).

*Survival analyses and GLM’s*: For survival models we used number of day-light hours as the time variable because the studied species is a diurnal bird (i.e, we did not count night hours as available for dispersal). We used generalized linear models (GLM) to analyze, mortality in the matrix, inter-patch dispersal success and exploratory behavior. We used a binomial distribution and considered the logistic link function for mortality in the matrix and inter-patch dispersal success models. For exploratory behavior models we used a Poisson distribution better suited for count data, or a Negative Binomial distribution for over dispersed data.

*Exploratory behavior data analysis:* One individual vocalized 363 times during the test. The range of number of vocalization values excluding that individual was 0 – 43 (Figure 2D). When this individual was removed from the analyses, results remained qualitatively the same (*VOC*: βIntercept = 0.77, SE = 0.49; βPopF = 1.21, SE = 0.63); the population effect model was selected over the constant model (∆AICc = 0.0, wi = 0.57) but the constant model was within the selected set with ∆AICc < 2 (∆AICc = 0.6 4.4, wi = 0.43).

**Table S1.** Model selection results for the source of variation of emigration propensity (probability of remaining in the release patch) and matrix transfer (probability of remaining in the matrix) as a function of inter-patch distance and population of origin. Parametric survival models were used in these analyses.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Rank** | **Model** | **Distribution** | **k** | **AICc** | **∆AICc** | **wi** | **ρ** |
| ***Emigration propensity*** |  |  |  |  |  |  |
| **1** | distance | Weibull | 3 | 201.2 | 0 | 0.595 | 0.53 |
| **2** | distance + origin | Weibull | 4 | 203 | 1.8 | 0.253 | 0.53 |
| **3** | distance \* origin  | Weibull | 5 | 205.2 | 4.0 | 0.083 | 0.54 |
| **4** | constant | Wibull | 2 | 206.1 | 4.9 | 0.052 | 0.48 |
| **5** | origin | Weibull | 3 | 208.3 | 7.1 | 0.017 | 0.48 |
| **6** | distance | Exponential  | 2 | 219.3 | 18.1 | < 0.001 | 1 |
| **7** | distance + origin | Exponential | 3 | 219.4 | 18.2 | < 0.001 | 1 |
| **8** | distance \* origin | Exponential | 4 | 221.2 | 20.0 | < 0.001 | 1 |
| **9** | constant | Exponential | 1 | 230.1 | 28.9 | < 0.001 | 1 |
| **10** | origin | Exponential | 2 | 232.2 | 31.0 | < 0.001 | 1 |
| ***Time in the Matrix***  |  |  |  |  |  |  |
| **1** | constant | Weibull | 2 | 57.1 | 0 | 0.3124 | 0.78 |
| **2** | constant  | Exponential  | 1 | 57.4 | 0.3 | 0.2721 | 1 |
| **3** | origin  | Exponential | 2 | 58.8 | 1.7 | 0.1334 | 1 |
| **4** | origin | Weibull | 3 | 59.8 | 2.7 | 0.08 | 0.78 |
| **5** | distance | Exponential  | 2 | 59.9 | 2.8 | 0.0768 | 1 |
| **6** | distance | Weibull | 3 | 60.2 | 3.1 | 0.0674 | 0.76 |
| **7** | distance + origin | Exponential | 3 | 61.8 | 4.7 | 0.0294 | 1 |
| **8** | distance + origin | Weibull | 4 | 63.3 | 6.2 | 0.0137 | 0.78 |
| **9** | distance \* origin | Exponential | 4 | 63.5 | 6.4 | 0.0124 | 1 |
| **10** | distance \* origin | Weibull | 5 | 66.8 | 9.7 | 0.0024 | 0.83 |

k: number of parameters; AICc: second order Akaike information criterion; ΔAICc: AICc differences; wi: Akaike weight; ρ: shape parameter (hazard rate).

**Table S2.** Model selection results for the source of variation on the probability of mortality in the matrix (N = 21) and inter-patch dispersal success (probability of reaching a fragment) as a function of inter-patch distance and population of origin (N = 30). Generalized lineal models with binomial distribution and logistic link function were used in these analyses. Models in bold were used for graphs in Figure 1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Rank** | **Model** | **k** | **AICc** | **∆AICc** | **wi** |
| ***Probability of mortality in the matrix*** |  |  |
| **1** | **distance + origin** | **3** | **19.9** | **0** | **0.52** |
| **2** | constant | 1 | 22.7 | 2.7 | 0.13 |
| **3** | distance | 2 | 22.9 | 2.9 | 0.12 |
| **4** | origin | 2 | 23.0 | 3.0 | 0.11 |
| **5** | distance \* origin | 4 | 23.0 | 3.1 | 0.11 |
| ***Probability of inter-patch dispersal***  |  |  |
| **1** | **distance + origin** | **3** | **38.0** | **0** | **0.423** |
| **2** | distance | 2 | 38.5 | 0.5 | 0.33 |
| **3** | Distance \* origin | 4 | 40.6 | 2.6 | 0.116 |
| **4** | constant | 1 | 41.6 | 3.6 | 0.07 |
| **5** | origin | 2 | 41.8 | 3.9 | 0.061 |

k: number of parameters; AICc: second order Akaike information criterion; ΔAICc: AICc differences; wi: Akaike weight.

**Table S3.** Model selection results for the source of variation on exploratory behavior variables as a function of population of origin. Generalized lineal models with Poisson distribution were used in these analyses. For vocalizations a Negative Binomial distribution was used.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Rank** | **Model** | **k** | **AICc** | **∆AICc** | **wi** |
| ***Exploratory score*** |  |  |
| **1** | origin | 2 | 248.7 | 0 | 0.9 |
| **2** | constant | 1 | 253.1 | 4.4 | 0.1 |
| ***Perches visited*** |  |  |  |  |
| **1** | constant | 1 | 88.0 | 0 | 0.72 |
| **2** | origin | 2 | 90.0 | 1.9 | 0.28 |
| ***Scanning***  |  |  |
| **1** | origin | 2 | 586.3 | 0 | 0.99 |
| **2** | constant | 1 | 594.9 | 8.6 | 0.01 |
| ***Vocalizations*** |  |  |  |  |
| **1** | origin | 3 | 165.0 | 0 | 0.93 |
| **2** | constant | 2 | 170.1 | 5.1 | 0.07 |

k: number of parameters; AICc: second order Akaike information criterion; ΔAICc: AICc differences; wi: Akaike weight.

Table S4. Summary statistics of exploratory behavior variables recorded during the novel environment test for *P. leucoptera* males form the continuous (n = 12) and fragmented forest landscapes (n = 16).

|  |  |  |
| --- | --- | --- |
|  | **Continuous**  | **Fragmented** |
| **Variable** | Range | Median | Mean | Range | Median | Mean |
| Exploratory Score | 8 - 28 | 17.5 | 18.08 | 0 - 31 | 12.5 | 14.13 |
| Number of perches  | 0 - 3 | 1.0 | 1.33 | 0 - 4 | 2.0 | 1.63 |
| Scanning  | 3 - 63 | 25.5 | 26.58 | 0 - 67 | 17 | 20.5 |
| Vocalizations | 0 - 15 | 1 | 2.2 | 0 - 363  | 2 | 29.5 |

**Figure S1.** Histogram of number of perches visited by *P. leucoptera* males during the novel environment test. Blue bars indicate individuals from the continuous forest and green bars to individuals from the fragmented landscape. 