Appendix S1

Ecosphere

Agricultural landscape composition affects the development and life expectancy of colonies of *Bombus impatiens*

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Table S1. ΔAICc comparing both scale (500m vs 1000m) for all models

| Models          | ΔAICc 500m | ΔAICc 1000 |
|-----------------|------------|------------|
| Max quad weight | 0          | 1.52       |
| Colony survival | 0          | 3.75       |
| Queen production| 0          | 4.23       |
| Nest weight     | 0          | 0.28       |
| Depredation     | 1.1        | 0          |
| Pollen          | 0          | 1.9        |
| mean            | 0.18       | 1.95       |
Table S2. Model-averaged coefficients and their unconditional 95% confidence intervals estimated by multimodel inference following model selection (see Table 2). Model coefficients were computed with standardized explanatory variables (zero mean and unit variance).

| Response variable | Model Type | Random factor | Averaged parameters | 95% IC |
|-------------------|------------|---------------|---------------------|--------|
| Max Quad weight (kg) | LM | None | Intensive crops | -0.39, -0.60, -0.17 |
| | | | Flowering crops | 0.23, 0.005, 0.45 |
| | | | Flower diversity | 0.14, -0.10, 0.32 |
| Colony survival | Cox regression | Quad | Intensive crops | -1.90, -2.39, -1.40 |
| | | | Flowering crops | 1.61, 1.14, 2.09 |
| | | | Flowering crops X Flower diversity | 0.03, -0.48, 0.53 |
| | | | Flowering crops X Flower diversity | 0.48, -0.17, 1.12 |
| Queen production | GLMM (neg. binom.) | Quad | Intensive crops | -0.06, -0.22, 0.09 |
| | | | Flowering crops | -0.02, -0.16, 0.12 |
| | | | Flower diversity | 0.08, -0.08, 0.27 |
| | | | Intensive crops X Flowering crops | -0.11, -0.28, 0.07 |
| | | | Flowering crops X Flower diversity | 0.06, -0.14, 0.27 |
| | | | Intensive crops X Flower diversity | -0.25, -0.48, -0.02 |
| Nest weight (g) | LMM | Quad | Intensive crops | -6.45, -13.55, 0.66 |
| | | | Flowering crops | 11.29, 4.93, 17.65 |
| | | | Flower diversity | -8.41, -15.65, -1.17 |
| | | | Depredation | 10.63, -5.80, 27.06 |
| | | | Intensive crops X Flowering crops | 1.35, -6.04, 8.74 |
| | | | Flowering crops X Flower diversity | -1.73, -9.11, 5.65 |
| | | | Intensive crops X Flower diversity | -8.48, -19.07, 2.12 |
| Depredation probability | GLMM (binomial) | Quad | Intensive crops | -0.20, -4.31, 3.91 |
| | | | Extensive crops | 0.68, -4.24, 5.60 |
| | | | Quad weight | 0.05, -3.25, 3.36 |
| | | | Intensive crops X Extensive crops | -0.36, -5.24, 4.52 |
| | | | Intensive crops | -0.04, -0.16, 0.08 |
| Pollen species richness | GLM (neg. binom.) | None | Flowering crops | -0.14, -0.01, -0.27 |
| | | | Flower diversity | 0.02, -0.11, 0.14 |
| | | | Intensive crops X Flowering crops | 0.06, -0.09, 0.20 |
| | | | Flowering crops X Flower diversity | 0.08, -0.03, 0.21 |
| | | | Intensive crops X Flower diversity | 0.22, 0.07, 0.38 |
Table S3. Estimated coefficients for every parameter of the more complex Max quad weight model with their associated standard error and variation inflation factor (VIF). The VIF quantifies the severity of multicollinearity within the model, where parameters with VIF >5 are considered as highly multicollinear.

| Parameters | Estimate | Standard error | VIF |
|------------|----------|----------------|-----|
| Intercept  | 6.05     | 0.11           | X   |
| INT        | -0.39    | 0.11           | 1.06|
| FLO        | 0.24     | 0.11           | 1.09|
| LOC        | 0.11     | 0.11           | 1.03|
Table S4. Estimated coefficients for every parameter of the more complex colony survival model with their associated standard error and variation inflation factor (VIF). The VIF quantifies the severity of multicollinearity within the model, where parameters with VIF > 5 are considered as highly multicollinear.

| Parameters   | Estimate | Standard error | VIF |
|--------------|----------|----------------|-----|
| INT          | -1.84    | 6.28           | 1.25|
| FLO          | 1.65     | 0.19           | 1.28|
| LOC          | -0.27    | 1.31           | 1.23|
| INT x FLO    | 0.49     | 0.61           | 1.71|
| INT x LOC    | 0.03     | 0.97           | 1.63|
| FLO x LOC    | 0.48     | 0.62           | 1.28|
Table S5. Estimated coefficients for every parameter of the more complex queen production model with their associated standard error and variation inflation factor (VIF). The VIF quantifies the severity of multicollinearity within the model, where parameters with VIF >5 are considered as highly multicollinear.

| Parameters | Estimate | Standard error | VIF |
|------------|----------|----------------|-----|
| Intercept  | 2.25     | 0.09           | X   |
| INT        | -0.09    | 0.08           | 1.70|
| FLO        | -0.09    | 0.08           | 1.40|
| LOC        | 0.01     | 0.10           | 1.63|
| INT x FLO  | -0.13    | 0.10           | 1.80|
| INT x LOC  | -0.25    | 0.12           | 1.39|
| FLO x LOC  | 0.06     | 0.10           | 2.04|
Table S6. Estimated coefficients for every parameter of the more complex nest weight model with their associated standard error and variation inflation factor (VIF). The VIF quantifies the severity of multicollinearity within the model, where parameters with VIF > 5 are considered as highly multicollinear.

| Parameters     | Estimate | Standard error | VIF |
|----------------|----------|----------------|-----|
| Intercept      | 80.77    | 5.02           | X   |
| depredation    | 18.15    | 8.14           | 1.84|
| INT            | -8.63    | 3.44           | 1.40|
| FLO            | 10.51    | 3.34           | 1.30|
| LOC            | -10.06   | 3.79           | 1.73|
| INT x FLO      | -1.26    | 4.21           | 1.71|
| INT x LOC      | -8.47    | 5.41           | 1.58|
| FLO x LOC      | -1.73    | 3.76           | 1.63|
Table S7. Estimated coefficients for every parameter of the more complex depredation model with their associated standard error and variation inflation factor (VIF). The VIF quantifies the severity of multicollinearity within the model, where parameters with VIF > 5 are considered as highly multicollinear.

| Parameters     | Estimate | Standard error | VIF |
|----------------|----------|----------------|-----|
| Intercept      | -7.20    | 3.13           | X   |
| Max weight     | -0.56    | 2.89           | 3.31|
| INT            | -0.29    | 2.17           | 2.07|
| EXT            | 0.71     | 2.49           | 1.79|
| INT x EXT      | -0.36    | -0.36          | 1.17|
Table S8. Estimated coefficients for every parameter of the more complex pollen model with their associated standard error and variation inflation factor (VIF). The VIF quantifies the severity of multicollinearity within the model, where parameters with VIF > 5 are considered as highly multicollinear.

| Parameters   | Estimate | Standard error | VIF |
|--------------|----------|----------------|-----|
| Intercept    | 0.96     | 0.05           | X   |
| INT          | -0.01    | 0.05           | 1.23|
| FLO          | -0.09    | 0.05           | 1.21|
| LOC          | 0.04     | 0.05           | 1.24|
| INT x FLO    | 0.17     | 0.07           | 1.75|
| INT x LOC    | 0.23     | 0.08           | 1.29|
| FLO x LOC    | 0.09     | 0.06           | 1.58|