**Supplementary Material to “Nesting behaviour and nest structure of the exotic bee *Megachile sculpturalis*”**

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**Supplementary Fig. 1.** Map of the area surrounding the bee hotel (blue triangle). In red the allotment gardens, in green the public parc where the *Styphnolobium japonicum* trees are located, and in yellow the urban areas with private gardens.



**Supplementary Fig.2.** Intra-specific aggressions among *Megachile sculpturalis* females. Photo by Laura Bortolotti.Immagine che contiene insetto, Insetto con ali a membrana, parassita, invertebrato

Descrizione generata automaticamenteImmagine che contiene ape, invertebrato, insetto, Insetto con ali a membrana

Descrizione generata automaticamente

**Supplementary Fig. 3.** Inter-specific aggression between nesting females of *Megachile sculpturalis* (bigger, marked in red and green on the thorax) and *Megachile disjunctiformis*. Photo by Laura Bortolotti.



**Supplementary Fig. 4.** *Megachile sculpturalis* larval provision. Pollen is of two different colours, yellow and orange, but palynological analysis showed that it all belonged to *Styphnolobium japonicum*. Note the translucent whitish egg of *M. sculpturalis*. Photo by Gherardo Bogo.

Immagine che contiene Fast food, pavimento, cibo, interno

Descrizione generata automaticamente

**Supplementary Table 1.** Mean daily a) temperatures (°C) and b) precipitations (mm) from June to September in Bologna (Italy) in the three years of study.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Month** | **2016** | **2017** | **2018** |
| Temperature |  |  |  |  |
|  | June | 22.4 ± 0.55  (18.0-28.4) | 25.2 ± 0.42  (20.5-29.7) | 23.2 ± 0.39  (18.5-28.2) |
|  | July | 26.3 ± 0.36  (20.1-29.4) | 26.4 ± 0.38  (22.4-29.5) | 25.8 ± 0.34  (21.1-30.0) |
|  | August | 24.3 ± 0.35  (19.9-27.9) | 27.0 ± 0.54  (22.4-33.2) | 25.7 ± 0.49  (17.9-30.5) |
|  | September | 21.7 ± 0.53  (17.8-26.8) | 18.6 ± 0.46  (13.4-24.8) | 21.6 ± 0.56  (14.6-25.0) |
| Precipitation |  |  |  |  |
|  | June | 1.9 ± 0.75  (0-17.8) | 0.8 ± 0.46  (0-12.7) | 2.6 ± 1.3  (0-31.7) |
|  | July | 0.27 ± 0.18  (0-5.5) | 0.18 ± 0.18  (0-5.5) | 1.66 ± 0.66  (0-15.3) |
|  | August | 1.24 ± 0.64  (0-18.1) | 0.8 ± 0.60  (0-17.4) | 1.23 ± 0.57  (0-11.8) |
|  | September | 1.26 ± 0.96  (0-28.5) | 3.28 ± 1.33  (0-33.6) | 0.67 ± 0.35  (0-9.4) |

**Supplementary Table 2.** Linear model coefficients for the variation of antechamber length in relation to total nest length and nest diameter. Asterisks indicate statistically significant differences.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Estimate | SE | t value | P value |
| Intercept | 4.347 | 3.441 | 1.263 | 0.210 |
| Nest length | 0.457 | 0.181 | 2.526 | 0.014\* |
| Nest diameter | −2.705 | 3.573 | −0.757 | 0.451 |

**Supplementary Table 3.** Linear model coefficients for the variation of (log-transformed) brood cell length in relation to total nest length, nest diameter, antechamber length and number of brood cells. Asterisks indicate statistically significant differences.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Estimate | SE | t value | P value |
| Intercept | 1.003 | 0.257 | 3.902 | < 0.001\* |
| Nest length | 0.027 | 0.015 | 1.818 | 0.071 |
| Nest diameter | −0.061 | 0.249 | −0.247 | 0.806 |
| Antechamber length | −0.019 | 0.010 | −1.948 | 0.053 |
| N. brood cells | −0.123 | 0.031 | −3.938 | < 0.001\* |

**Supplementary Table 4.** Generalized linear model coefficients for the variation of number of completed brood cells in relation to total nest length, nest diameter, and antechamber length. Asterisks indicate statistically significant differences.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Estimate | SE | z value | P value |
| Intercept | −0.834 | 0.393 | −2.127 | 0.033\* |
| Nest length | 0.043 | 0.021 | 2.088 | 0.037\* |
| Nest diameter | 1.303 | 0.427 | 3.052 | 0.002\* |
| Antechamber length | −0.050 | 0.013 | −3.802 | < 0.001\* |