**ADDITIONAL FILE 4 - Supplementary statistics.**

**Heterogeneity of tick abundance and infection with zoonotic pathogenic bacteria in a Belgian peri-urban forest.**

**Raphaël Rousseau1\*, Marcella Mori2, Benoît Kabamba3, Sophie O. Vanwambeke1**

**1** Georges Lemaitre Centre for Earth and Climate Research, Earth and Life Institute, UCLouvain, Place Pasteur, Louvain-la-Neuve, Belgium.

**2** Sciensano, Veterinary bacteriology, Groeselenberg 99, Ukkel/Uccle, Belgium.

**3** Pôle de Microbiologie Médicale, Institute of Clinical and Experimental Research (IREC), UCLouvain, Brussels, Belgium.

**Table S1**: Moran I index for the dependent and continuous explantoary site variables. The expected I is -0.17; P < 0.05 ‘\*’.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Observed** | **SD** | **P** |
| **DON** | -0.42 | 0.14 | 0.07 |
| **DOA** | 0.14 | 0.15 | 0.0400 (\*) |
| **DIA** | -0.19 | 0.07 | 0.70 |
| **DIN** | -0.28 | 0.14 | 0.39 |
| **Vegetation height** | -0.03 | 0.14 | 0.33 |
| **Slope percentage** | -0.02 | 0.15 | 0.35 |
| **Distance to forest edge** | 0.05 | 0.14 | 0.13 |

**Table S2**: Kruskal-Wallis H and p-values (P) of the density of nymphs for the categorical variables. P < 0.001 ‘\*\*\*’; P < 0.01 ‘\*\*’; P < 0.05 ‘\*’.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **DON** | **DOA** | **DIN** | **DIA** |
|  | **H** | **P** | **H** | **P** | **H** | **P** | **H** | **P** |
| **SU** | 24.49 | 0.0004 (\*\*\*) | 15.85 | 0.0146 (\*) | 26.67 | < 0.0001 (\*\*\*) | 19.92 | 0.0029 (\*\*) |
| **Season** | 41.97 | < 0.0001 (\*\*\*) | 13.45 | 0.0012 (\*\*) | 10.67 | 0.0048 (\*\*) | 6.77 | 0.0339 (\*) |
| **Undergrowth** | 7.96 | 0.019 (\*) | 3.39 | 0.183 | 7.88 | 0.0204 (\*) | 3.08 | 0.214 |
| **Forest type** | 1.28 | 0.257 | 1.08 | 0.300 | 12.25 | 0.0005 (\*\*\*) | 8.03 | 0.0046 (\*\*) |
| **Forest management** | 2.49 | 0.287 | 4.59 | 0.101 | 1.19 | 0.552 | 7.79 | 0.0203 (\*) |
| **Type of soils** | 9.64 | 0.019 (\*) | 2.88 | 0.089 | 0.23 | 0.633 | 0.05 | 0.816 |
| **Drainage** | 3.96 | 0.047 (\*) | 4.77 | 0.0289 (\*) | 24.22 | < 0.0001 (\*\*\*) | 12.34 | 0.0004 (\*\*\*) |



**Figure S1**: Corrplot of the Spearman coefficient correlations for the explanatory and continuous response variables. Only the significant correlations at P < 0.05 are indicated.

**Table S3:** Vuong test (Z) for the comparison between the negative binomial models, and, respectively the Poisson models, the zero-inflated (ZI) Poisson models and the ZI negative binomial models. When there was no significant z-test score, we choose the simplest distribution. P < 0.001 ‘\*\*\*’; P < 0.01 ‘\*\*’; P < 0.05 ‘\*’.

|  |  |  |
| --- | --- | --- |
| **Negative binomial model preferred over:**  | **DON** | **DOA** |
| **Z** | **P** | **Z** | **P** |
| Poisson Model | 5.717 | < 0.0001 (\*\*\*) | 1.789 | 0.0368 (\*) |
| ZI Poisson Model | 4.565 | < 0.0001 (\*\*\*) | 1.783 | 0.0373 (\*) |
| ZI negative binomial model | -0.316 | 0.3761 | 0.996 | 0.1597 |