**Additional File 1 – Supplementary Tables S1-S5**

**Table S1**. Environmental and biotic (demography and body condition of rats) variables collected during trapping of animals.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable\*** | **Type** | **Levels** | **Variable used for Molluscs** | **Variable used for Rodents** |
| Food access | Binomial | Presence/Absence of food access | No | Yes |
| Tree | Continuous | Number of Trees | No | Yes |
| Season | Categorical | Rainy | No | Yes |
|  |  | Dry |  |  |
| Garbage access | Binomial | Presence/Absence of garbage access | Yes | Yes |
| Rubbish | Binomial | Presence/Absence of cumulative rubbish | Yes | Yes |
| Construction Material | Binomial | Presence/Absence of construction material | Yes | Yes |
| Water | Categorical | Absent | Yes | Yes |
|  |  | Standing |  |  |
|  |  | Running |  |  |
| Open sewage | Binomial | Presence/Absence | Yes | Yes |
| Cumulative raina | Continuous | Sum of the mean cumulative rain from month zero (month of capture), in millimeters. Rain accumulation 5 days before mollusc collection and 15 days before rodent capture | Yes | Yes |
| Geographic valley | Categorical | Valley 1 | Yes | Yes |
|  |  | Valley 2 |  |  |
|  |  | Valley 3 |  |  |
| Type of Ground | Categorical | Permeable | Yes | Yes |
|  |  | Impermeable |  |  |
| Vegetation | Categorical | Absent | Yes | No |
|  |  | Herbaceous |  |  |
|  |  | Shrubbery presence |  |  |
| Humiditya | Continuous | Sum of the mean humidity from month zero (month of capture), in millimeters. Humidity accumulation 15 days before mollusc sampling | Yes | No |
| Sample effort | Categorical | 2 days | Yes | No |
|  |  | 3 days |  |  |
| Sex | Categorical | Female | No | Yes |
|  |  | Male |  |  |
| Age (d)b | Continuous | Age in days | No | Yes |
| Maturityc | Categorical | Immature | No | Yes |
|  |  | Young-mature |  |  |
|  |  | Mature |  |  |
| Scaled mass index (Smi)c | Continuous | Weight/length ratio index of overall body condition variable, which accounts for the effect of age | No | Yes |
| Internal fat | Binomial | Presence/Absence of visceral or subcutaneous fat | No | Yes |
| Wounds | Binomial | Presence/Absence of external wounds | No | Yes |
| \* All variables were tested as independent risk factors in the Zero-Inflated Model of probability and intensity of species infection, prior to the addition of coinfection variables. | | | | |
| a Data obtained from Water Resources Institute of the state of Bahia (INEMA) station; | | | |  |
| b Panti-May et al., 2016; | | |  |  |
| c Carvalho-Pereira et al., 2018; Carvalho-Pereira et al., 2019. | | |  |  |

**Table S2**. Univariate Zero-Inflated models by stages for the presence and counting of *Angiostrongylus cantonensis* in rats.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Environment* | | | | |  | | |
|  | ***Count*** | | | ***Zero-Inflated*** | | | | |
| *Predictors* | *IRR* | *CI* | *Sig.* | *IRR* | *CI* | | *Sig.* | |
| Type of Ground |  |  |  |  |  | |  | |
| (Intercept) | 6.370 | 5.373 – 7.552 | \*\*\* | 1.329 | 0.754 – 2.342 | |  | |
| Impermeable (Ref.) | - | - |  | - | - | |  | |
| Permeable | 1.002 | 0.800 – 1.255 |  | 1.501 | 0.726 – 3.102 | |  | |
| (Intercept) | 6.153 | 4.892– 7.739 | \*\*\* | 1.245 | 0.582– 2.663 | |  | |
| Open sewage | 1.048 | 0.806– 1.362 |  | 1.493 | 0.632– 3.527 | |  | |
| Water |  |  |  |  |  | |  | |
| (Intercept) | 6.825 | 5.716 – 8.150 | \*\*\* | 0.775 | 0.385 – 1.561 | |  | |
| Absent (Ref.) | - | - |  | - | - | |  | |
| Standing | 0.900 | 0.709 – 1.142 |  | **2.621** | **1.122 – 6.118** | | **\*\*** | |
| Running | 0.876 | 0.603 – 1.274 |  | **4.060** | **1.282 – 12.906** | | **\*\*** | |
| (Intercept) | 5.266 | 4.271 – 6.494 | \*\*\* | 1.984 | 1.106 – 3.557 | | **\*\*** | |
| Rubbish | **1.321** | **1.032 – 1.692** | **\*\*** | 0.786 | 0.377 – 1.636 | |  | |
| (Intercept) | 6.209 | 5.153 – 7.481 | \*\*\* | 1.273 | 0.686 – 2.361 | |  | |
| Garbage access | 1.042 | 0.826 – 1.315 |  | 1.541 | 0.725 – 3.278 | |  | |
| (Intercept) | 6.870 | 5.910 – 7.986 | \*\*\* | 1.578 | 0.955 – 2.606 | | **\*\*** | |
| Tree | **0.971** | **0.940 – 1.002** | **\*\*** | 1.026 | 0.931 – 1.130 | |  | |
| (Intercept) | 7.345 | 6.246 – 8.637 | \*\*\* | 1.048 | 0.568 – 1.935 | |  | |
| Food access | **0.776** | **0.621 – 0.970** | **\*\*** | **2.061** | **0.969 – 4.384** | | **\*\*** | |
| (Intercept) | 5.656 | 4.905 – 6.522 | \*\*\* | 1.755 | 1.151 – 2.675 | |  | |
| Construction material | **1.413** | **1.124 – 1.777** | \*\*\* | 0.911 | 0.421 – 1.969 | |  | |
| (Intercept) | 4.904 | 3.862 – 6.228 | \*\*\* | 2.100 | 1.012 – 4.358 | | **\*** | |
| Cumulative rain | **1.001** | **1.000 – 1.0017** | **\*\*** | 0.999 | 0.996 – 1.001 | |  | |
| Season |  |  |  |  |  | |  | |
| (Intercept) | 5.629 | 4.672 – 6.782 | \*\*\* | 1.789 | 1.035 – 3.095 | | **\*\*** | |
| Dry (Ref.) | - | - |  | - | - | |  | |
| Rainy | **1.223** | **0.969 – 1.544** | **\*\*** | 0.923 | 0.451 – 1.889 | |  | |
| Geographic valley |  |  |  |  |  | |  | |
| (Intercept) | 5.136 | 3.989 – 6.613 | \*\*\* | 2.396 | 1.220 – 4.704 | | **\*\*** | |
| Valley 1 (Ref.) | - | - |  | - | - | |  | |
| Valley 2 | **1.511** | **1.113 – 2.050** | **\*\*** | 0.637 | 0.256 – 1.584 | |  | |
| Valley 3 | 1.155 | 0.846 – 1.576 |  | 0.602 | 0.248 – 1.457 | |  | |
|  |  | *Demography and body condition* | | | | |  | |
| *Predictors* | *IRR* | *CI* | *Sig.* | *IRR* | *CI* | | *Sig.* | |
| (Intercept) | 9.717 | 7.277 – 12.976 | \*\*\* | 2.397 | 1.036 – 5.546 | | **\*\*** | |
| Age (days) | **0.995** | **0.992 – 0.998** | **\*\*** | 0.996 | 0.987 – 1.005 | |  | |
| Maturity |  |  |  |  |  | |  | |
| (Intercept) | 8.247 | 6.478 – 10.500 |  | 2.624 | 1.162 – 5.924 | | **\*\*** | |
| Immature (Ref.) | - | - |  | - | - | |  | |
| Mature | **0.742** | **0.563 – 0.978** | **\*** | 0.516 | 0.205 – 1.298 | |  | |
| Young-mature | **0.539** | **0.316 – 0.918** | **\*\*** | 1.031 | 0.252 – 4.219 | |  | |
| Sex |  |  |  |  |  | |  | |
| (Intercept) | 5.550 | 4.621 – 6.666 | \*\*\* | 1.846 | 1.085 – 3.141 | | **\*\*** | |
| Sex Male (Ref.) | - | - |  | - | - | |  | |
| Sex Female | **1.260** | **1.000 – 1.587** | **\*** | 0.869 | 0.427 – 1.770 | |  | |
| (Intercept) | 5.756 | 3.511 – 9.437 |  | 0.452 | 0.092 – 2.208 | |  | |
| Scaled mass index (Smi) | 1.000 | 0.998 – 1.002 |  | **1.005** | **0.999 – 1.012** | | **\*\*** | |
| (Intercept) | 7.529 | 5.403 – 10.490 |  | 1.746 | 0.555 – 5.493 | |  | |
| Internal fat | 0.936 | 0.824 – 1.062 |  | 0.994 | 0.645 – 1.532 | |  | |
| (Intercept) | 6.237 | 4.967 – 7.832 |  | 2.742 | 1.415 – 5.312 | |  | |
| Wounds | 1.029 | 0.792 – 1.336 |  | **0.501** | **0.228 – 1.099** | | **\*\*** | |
|  |  | *Coinfection* | | |  | |  | |
|  | *IRR* | *CI* | *Sig.* | *IRR* | *CI* | | *Sig.* | |
|  | ***Count*** | | | ***Zero-Inflated*** | | | | |
| (Intercept) | 6.689 | 5.314 – 8.41 | \*\*\* | 2.595 | 1.213 – 5.551 | | | **\*\*** |
| Richness of helminths | 0.958 | 0.847 – 1.084 |  | 0.774 | 0.507 – 1.181 | | |  |
|  |  | *Models for infection* | | | | | |  |
| (Intercept) | 5.985 | 2.672 – 13.403 | \*\*\* | 7.977 | 0.997 – 63.821 | | | **\*\*** |
| *Capillaria* sp.presencea | 0.923 | 0.403 – 2.113 |  | 0.211 | 0.024 – 1.821 | | |  |
| *Capillaria* sp. presence: Male (Ref.)a | - | - |  | - | - | | |  |
| *Capillaria* sp. presence: Femalea | **1.230** | **0.968 – 1.562** | **\*** | 0.886 | 0.421 – 1.864 | | |  |
| (Intercept) | 2.821 | 1.166 – 6.821 |  | 2.291 | 0.419 – 12.514 | | |  |
| *Strongyloides* sp. presence | 2.064 | 0.837 – 5.090 |  | 0.823 | 0.137 – 4.912 | | |  |
| *Strongyloides* sp. presence: Male (Ref.) | - | - |  | - | - | | |  |
| *Strongyloides* sp. presence:Female | 1.167 | 0.919 – 1.482 |  | 0.814 | 0.386 – 1.713 | | |  |
| (Intercept) | 6.603 | 5.755 – 7.577 | \*\*\* | 1.867 | 1.206 – 2.888 | | | **\*\*** |
| *Nippostrongylus brasiliensis* presence | 0.786 | 0.570 – 1.084 |  | 0.825 | 0.320 – 2.128 | | |  |
| *N. brasiliensis* presence:Male (Ref.) | - | - |  | - | - | | |  |
| *N. brasiliensis* presence:Female | 1.152 | 0.756 – 1.755 |  | 0.922 | 0.256 – 3.324 | | |  |
| (Intercept) | 6.011 | 5.276 – 6.849 | \*\*\* | 1.913 | 1.292 – 2.834 | | |  |
| *Hymenolepis* spp. Presence | 0.967 | 0.675 – 1.385 |  | 0.432 | 0.123 – 1.516 | | |  |
| *Hymenolepis* spp. presence:Male (Ref.) | - | - |  | - | - | | |  |
| *Hymenolepis* spp. presence:Female | **1.719** | **1.053 – 2.805** | **\*** | 1.610 | 0.237 – 10.908 | | |  |
| (Intercept) | 6.226 | 5.542 – 6.995 | \*\*\* | 1.733 | 1.205 – 2.492 | | | **\*\*** |
| *Gongylonema neoplasticum* presence | 1.123 | 0.529 – 2.383 |  | 0.575 | 0.035 – 9.448 | | |  |
| (Intercept) | 6.551 | 5.810 – 7.387 | \*\*\* | 1.752 | 1.193 – 2.571 | | |  |
| Trichuridae presence | **0.598** | **0.327 – 1.092** | **\*\*** | 0.734 | 0.152 – 3.529 | | |  |
| Trichuridae presence:Male (Ref.) | - | - |  | - | - | | |  |
| Trichuridae presence:Female | 1.089 | 0.483 – 2.459 |  | 1.521 | 0.192 – 12.010 | | |  |
|  | *Models for intensity of infection* | | | | | | | |
| *Capillaria* sp. intensityb |  |  |  |  |  |  | | |
| (Intercept) | 6.376 | 5.542 – 7.334 | \*\*\* | 1.962 | 1.273 – 3.025 | **\*\*** | | |
| 0-25% (Ref.) | - | - |  | - | - |  | | |
| 25-50% | 0.924 | 0.696 – 1.225 |  | 0.460 | 0.175 – 1.204 |  | | |
| 50-75% | 0.885 | 0.537 – 1.460 |  | 0.167 | 0.016 – 1.718 |  | | |
| 75-100% | 1.254 | 0.617 – 2.545 |  | 0.509 | 0.030 – 8.425 |  | | |
| (Intercept) | 2.506 | 1.167 – 3.882 | \*\*\* | 1.686 | 0.494 – 5.747 |  | | |
| Db *Strongyloides* sp. intensity | **1.101** | **1.048 – 1.158** | \*\*\* | 1.010 | 0.867 – 1.177 |  | | |
| Db Strongyloides sp. intensity: Male (Ref.) | - | - |  | - | - |  | | |
| Db *Strongyloides* sp. intensity: Female | **1.042** | **1.011 – 1.073** | **\*\*** | 0.982 | 0.892 – 1.081 |  | | |
| (Intercept) | 6.841 | 5.942 – 7.876 | \*\*\* | 1.815 | 1.166 – 2.826 | **\*\*** | | |
| Db *N. brasiliensis* intensity | **0.914** | **0.854 – 0.979** | **\*\*** | 1.005 | 0.859 – 1.177 |  | | |
| Db *N. brasiliensis* intensity: Male (Ref.) | - | - |  | - | - |  | | |
| Db *N. brasiliensis* intensity: Female | **1.081** | **1.000-1.168** | **\*** | 0.917 | 0.740 – 1.136 |  | | |
| (Intercept) | 6.087 | 5.349 – 6.926 | \*\*\* | 1.907 | 1.288 – 2.823 | \*\*\* | | |
| Db *Hymenolepis* spp. intensity | 0.993 | 0.954 – 1.032 |  | 0.907 | 0.789 – 1.043 |  | | |
| *Hymenolepis* spp. Intensity: Male (Ref.) | - | - |  | - | - |  | | |
| *Hymenolepis* spp. Intensity: Female | **1.065** | **1.004 – 1.130** | **\*** | 1.035 | 0.811 – 1.320 |  | | |
| (Intercept) | 6.185 | 5.497 – 6.959 | \*\*\* | 1.759 | 1.219 – 2.539 | **\*\*** | | |
| Db *G. neoplasticum* intensity | 1.030 | 0.954 – 1.113 |  | 0.883 | 0.632 – 1.233 |  | | |
| (Intercept) | 6.641 | 5.889 – 7.488 | \*\*\* | 1.733 | 1.777 – 2.551 | **\*\*** | | |
| Db Trichuridae intensity | **0.917** | **0.849 – 0.991** | **\*** | 0.944 | 0.772 – 1.154 |  | | |
| Db Trichuridae intensity:Male (Ref.) | - | - |  | - | - |  | | |
| Db Trichuridae intensity:Female | 0.982 | 0.847 – 1.138 |  | 1.108 | 0.793 – 1.548 |  | | |
| IRR = Incidence Rate Ratios; CI = Confidence intervals; Db= ‘double’; Sig' = significance codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘#’ 0.1 ‘ ’ 1.  a Presence or absence of wound marks on the liver of rats; bProportion of wounds on the liver of rats.  Trichuridae includes eggs of the species *Capillaria* sp. and *Trichuris muris* found in the rats feces. | | | | | | | | |
|  | | | | | | | | |

**Table S3**. Univariate Zero-Inflated models for the presence and count of terrestrial molluscs associated with environmental conditions.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Achatina fulica* | | | | | | | | | | | | | | | | *Bulimulus tenuissimus* | | | | | | | | | | | | | | |
| *Predictors* | *IRR* | *CI* | | | *Sig.* | | | *IRR* | | *CI* | | *Sig.* | | | | | *IRR* | *CI* | | | *Sig.* | | | | *IRR* | | *CI* | | *Sig.* | | |
|  | ***Count*** | | | | | | | ***Zero-Inflated*** | | | | | | | | | ***Count*** | | | | | | | | ***Zero-Inflated*** | | | | | | |
| Type of Ground |  | |  | | |  | |  | |  | |  | | | | |  | | |  | | |  | |  | | |  | |  | |
| (Intercept) | 4.296 | | 0.341 – 54.065 | | |  | | 1.953 | | 0.072 – 52.682 | |  | | | | | 5.536 | | | 2.726 – 11.242 | | | \*\*\* | | 6.165 | | | 1.809 – 21.011 | | \*\* | |
| Impermeable (Ref.) | - | | - | | |  | | - | | - | |  | | | | | - | | | - | | |  | | - | | | - | |  | |
| Permeable | 1.425 | | 0.164 – 12.407 | | |  | | 0.553 | | 0.061 – 4.989 | |  | | | | | 0.809 | | | 0.334 – 1.958 | | |  | | 0.305 | | | 0.062 – 1.487 | |  | |
| (Intercept) | 2.272 | | 0.307 – 16.808 | | |  | | 2.408 | | 0.236 – 24.505 | |  | | | | | 6.190 | | | 3.660 – 10.469 | | |  | | 3.457 | | | 1.133 – 10.547 | | \* | |
| Open sewage | 4.099 | | 0.559 – 30.043 | | |  | | 0.750 | | 0.104 – 5.412 | |  | | | | | 0.618 | | | 0.286 – 1.336 | | |  | | 0.929 | | | 0.205 – 4.201 | |  | |
| Water |  | |  | | |  | |  | |  | |  | | | | |  | | |  | | |  | |  | | |  | |  | |
| (Intercept) | 2.714 | | 0.869 – 8.465 | | | \* | | 3.264 | | 0.859 – 12.397 | | \*\* | | | | | 6.211 | | | 3.831 – 10.069 | | |  | | 4.465 | | | 1.508 – 13.222 | |  | |
| Absent (Ref.) | - | | - | | |  | | - | | - | |  | | | | | - | | | - | | |  | | - | | | - | |  | |
| Standing | **12.008** | | **10.552 – 92.903** | | | \* | | 2.718 | | 0.236 – 31.348 | |  | | | | | 0.534 | | | 0.240 – 1.188 | | |  | | **0.200** | | | **0.031 – 1.264** | | \* | |
| Running | **3.277** | | **0.801 – 13.408** | | | \* | | 0.267 | | 0.039 – 1.837 | |  | | | | | 0.958 | | | 0.321 – 2.859 | | |  | | 1.998 | | | 0.193 – 20.652 | |  | |
| (Intercept) | 8.040 | | 0.466 – 1.38x102 | | |  | | 3.949 | | 0.256 – 60.753 | |  | | | | | 4.295 | | | 1.657 – 11.132 | | |  | | 6.637 | | | 1.478 – 29.797 | | \* | |
| Rubbish | 0.585 | | 0.044 – 7.715 | | |  | | 0.231 | | 0.014 – 3.781 | |  | | | | | 1.159 | | | 0.400 – 3.352 | | |  | | 0.349 | | | 0.061 – 1.997 | |  | |
| (Intercept) | 10.762 | | 3.521 – 32.893 | | | \*\*\* | | 2.257 | | 0.642 – 7.934 | |  | | | | | 4.978 | | | 3.047 – 8.134 | | | \*\*\* | | 2.181 | | | 0.875 – 5.430 | | \* | |
| Garbage access | **0.159** | | **0.025 – 1.033** | | | \* | | 0.994 | | 0.129 – 7.607 | |  | | | | | 0.862 | | | 0.298 – 2.495 | | |  | | 3.262 | | | 0.571 – 18.619 | |  | |
| Vegetation |  | |  | | |  | |  | |  | |  | | | | |  | | |  | | |  | |  | | |  | |  | |
| (Intercept) | 2.035 | | 0.156 – 26.537 | | |  | | 0.781 | | 0.008 – 75.772 | |  | | | | | 9.999 | | | 5.379 – 18.587 | | | \*\*\* | | 5.999 | | | 0.722 – 49.834 | | \* | |
| Absent (Ref.) | - | | - | | |  | | - | | - | |  | | | | | - | | | - | | |  | | - | | | - | |  | |
| Herbaceous Vegetation | 4.039 | | 0.307 – 53.081 | | |  | | 4.095 | | 0.093 – 1.80x102 | |  | | | | | 0.496 | | | 0.241 – 1.019 | | |  | | 0.495 | | | 0.049 – 4.994 | |  | |
| Shrubbery presence | 3.328 | | 0.223 – 49.759 | | |  | | 1.322 | | 0.031 – 56.199 | |  | | | | | **0.223** | | | **0.067 – 0.739** | | | \*\* | | 0.502 | | | 0.033 – 7.446 | |  | |
| (Intercept) | 8.470 | | 1.699 – 42.206 | | | \* | | 2.459 | | 0.386– 15.639 | |  | | | | | 5.188 | | | 3.104 – 8.671 | | |  | | 3.702 | | | 1.487 – 9.215 | | \*\* | |
| Construction material | 0.307 | | 0.038 – 2.429 | | |  | | 0.425 | | 0.031 – 5.718 | |  | | | | | 0.795 | | | 0.315 – 2.005 | | |  | | 0.673 | | | 0.131 – 3.447 | |  | |
| (Intercept) | 1.779 | | 5.259 – 6.024 | | |  | | 0.000 | | 0.000 – 5.064 | |  | | | | | 5.391 | | | 3.258 – 8.921 | | |  | | 3.632 | | | 1.569 – 8.407 | | \*\* | |
| Cumulative rain | 1.439 | | 4.062 – 5.101 | | |  | | 3.591 | | 0.000 – 7.715 | |  | | | | | 0.826 | | | 0.483 – 1.412 | | |  | | 0.817 | | | 0.367 – 1.818 | |  | |
| (Intercept) | 5.98x10-7 | | | 0.000 – 4.87x10-2 | | \* | | 1.236 | | 0.000 – 5.373 | |  | | | | | 382.81 | | | 1.172 – 1.24x105 | | | \*\* | | 16.912 | | | 0.000 – 6.15x105 | | |  |
| Humidity | **1.221** | | **1.064 – 1.403** | | | \*\* | | 0.980 | | 0.838 – 1.149 | |  | | | | | 0.945 | | | 0.877 – 1.018 | | |  | | 0.979 | | | 0.857 – 1.119 | | |  |
| Geographic valley |  | |  | | |  | |  | |  | |  | | | | |  | | |  | | |  | |  | | |  | | |  |
| (Intercept) | 8.286 | | 0.469 – 1.46x102 | | |  | | 5.780 | | 0.499 – 66.994 | |  | | | | | 5.984 | | | 3.384 – 10.584 | | | \*\*\* | | 3.488 | | | 0.723 – 16.813 | | |  |
| Valley 1(Ref.) |  | |  | | |  | |  | |  | |  | | | | |  | | |  | | |  | |  | | |  | | |  |
| Valley 2 | 1.150 | | 0.057 – 22.912 | | |  | | 0.226 | | 0.016 – 3.086 | |  | | | | | 0.625 | | | 0.306 – 1.276 | | |  | | 0.412 | | | 0.062 – 2.739 | | |  |
| Valley 3 | 0.275 | | 0.011 – 6.653 | | |  | | 0.352 | | 0.019 – 6.249 | |  | | | | | 1.670 | | | 0.719 – 3.878 | | |  | | 4.299 | | | 0.331 – 55.802 | | |  |
| Sample effort |  | |  | | |  | |  | |  | |  | | | | |  | | |  | | |  | |  | | |  | | |  |
| (Intercept) | 4.462 | | 0.484 – 41.091 | | | \* | | 1.975 | | 0.102 – 38.179 | | \*\* | | | | | 4.823 | | | 2.502 – 9.296 | | | \*\*\* | | 6.235 | | | 2.146 – 18.114 | | | \*\*\* |
| 2 days (Ref.) |  | |  | | |  | |  | |  | |  | | | | |  | | |  | | |  | |  | | |  | | |  |
| 3 days | **1.712** | | **0.179 – 16.311** | | | \*\*\* | | 0.329 | | 0.015 – 7.175 | |  | | | | | 1.000 | | | 0.418 – 2.389 | | |  | | **0.149** | | | **0.027 – 0.794** | | | \* |
|  | *Sarasinula marginata* | | | | | | | | | | | | | | | | *Subulina octona* | | | | | | | | | | | | | | |
| *Predictors* | *IRR* | *CI* | | | *Sig.* | | | | *IRR* | *CI* | | | *Sig.* | | | | *IRR* | *CI* | | | *Sig.* | | | *IRR* | | *CI* | | | *Sig.* | | |
|  | ***Count*** | | | | | | | | ***Zero-Inflated*** | | | | | | | | ***Count*** | | | | | | | ***Zero-Inflated*** | | | | | | | |
| Type of Ground |  |  | | | | |  | |  | |  | | |  | | |  | |  | | |  | |  | | |  | |  | | |
| (Intercept) | 1.814 | 0.621 – 5.298 | | | | |  | | 2.070 | | 0.521 – 8.219 | | |  | | | 15.368 | | 9.449 – 24.995 | | |  | | 1.727 | | | 0.721 – 4.136 | |  | | |
| Impermeable (Ref.) | - | - | | | | |  | | - | | - | | |  | | | - | | - | | |  | | - | | | - | |  | | |
| Permeable | **4.116** | **1.212 – 13.972** | | | | | \* | | 0.676 | | 0.132 – 3.454 | | |  | | | 0.577 | | 0.299 – 1.109 | | |  | | 0.345 | | | 0.091 – 1.293 | |  | | |
| (Intercept) | 1.977 | 0.669 – 5.837 | | | | |  | | 1.542 | | 0.343 – 6.933 | | |  | | | 13.498 | | 7.707 – 23.642 | | |  | | 1.530 | | | 0.586 – 3.995 | |  | | |
| Open sewage | **3.653** | **1.058 – 12.612** | | | | | \* | | 1.225 | | 0.227 – 6.584 | | |  | | | **0.770** | | **0.379 – 1.567** | | | **\*** | | 0.514 | | | 0.141 – 1.874 | |  | | |
| Water |  |  | | | | |  | |  | |  | | |  | | |  | |  | | |  | |  | | |  | |  | | |
| (Intercept) | 2.327 | 1.212 – 4.464 | | | | | \* | | 2.199 | | 0.783 – 6.178 | | |  | | | 13.165 | | 7.826 – 22.148 | | |  | | 1.707 | | | 0.709 – 4.109 | |  | | |
| Absent (Ref.) | - | - | | | | |  | | - | | - | | |  | | | - | | - | | |  | | - | | | - | |  | | |
| Standing | **6.157** | **2.729 – 13.890** | | | | | \*\*\* | | 0.757 | | 0.129 – 4.424 | | |  | | | 0.661 | | 0.280 – 1.560 | | |  | | 0.548 | | | 0.115 – 2.599 | |  | | |
| Running | 1.330 | 0.478 – 3.704 | | | | |  | | 0.953 | | 0.166 – 5.459 | | |  | | | 0.894 | | 0.403 – 1.984 | | |  | | 0.180 | | | 0.026 – 1.227 | |  | | |
| (Intercept) | 1.690 | 0.370 – 7.706 | | | | |  | | 2.380 | | 0.391 – 14.467 | | |  | | | 11.447 | | 6.424 – 20.399 | | |  | | 1.233 | | | 0.449 – 3.386 | |  | | |
| Rubbish | 3.448 | 0.702 – 16.940 | | | | |  | | 0.543 | | 0.082 – 3.585 | | |  | | | 1.010 | | 0.489 – 2.086 | | |  | | 0.774 | | | 0.211 – 2.837 | |  | | |
| (Intercept) | 4.028 | 1.429 – 11.354 | | | | | \*\* | | 1.154 | | 0.243 – 5.468 | | |  | | | 12.964 | | 8.294 – 20.265 | | |  | | 1.023 | | | 0.435 – 2.406 | |  | | |
| Garbage access | 1.265 | 0.293 – 5.460 | | | | |  | | 2.021 | | 0.368 – 11.082 | | |  | | | 0.740 | | 0.368 – 1.488 | | |  | | 1.009 | | | 0.279 – 3.644 | |  | | |
| Vegetation |  |  | | | | |  | |  | |  | | |  | | |  | |  | | |  | |  | | |  | |  | | |
| (Intercept) | 1.986 | 0.330 – 11.958 | | | | |  | | 1.317 | | 0.109 – 15.918 | | |  | | | 6.457 | | 3.030 – 13.759 | | |  | | 0.674 | | | 0.135 – 3.361 | |  | | |
| Absent (Ref.) |  |  | | | | |  | |  | |  | | |  | | |  | |  | | |  | |  | | |  | |  | | |
| Herbaceous Vegetation | 2.253 | 0.344 – 14.747 | | | | |  | | 1.094 | | 0.088 – 13.476 | | |  | | | **1.801** | | **0.751 – 4.319** | | | **\*** | | 2.025 | | | 0.334 – 12.262 | |  | | |
| Shrubbery presence | 4.262 | 0.439 – 41.293 | | | | |  | | 2.285 | | 0.128 – 40.514 | | |  | | | 2.428 | | 0.919 – 6.406 | | |  | | 1.166 | | | 0.145 – 9.349 | |  | | |
| (Intercept) | 2.245 | 1.018 – 4.948 | | | | | \* | | 2.255 | | 0.786 – 6.464 | | |  | | | 11.581 | | 7.575 – 17.705 | | |  | | 1.181 | | | 0.557 – 2.501 | |  | | |
| Construction material | **4.252** | **1.537 – 11.761** | | | | | \*\* | | 0.506 | | 0.104 – 2.462 | | |  | | | 0.984 | | 0.464 – 2.088 | | |  | | 0.670 | | | 0.159 – 2.807 | |  | | |
| (Intercept) | 6.147 | 3.027 – 12.481 | | | | | \*\*\* | | 2.411 | | 0.971 – 5.984 | | | \* | | | 8.813 | | 6.441 – 12.059 | | |  | | 1.077 | | | 0.546 – 2.124 | |  | | |
| Cumulative rain | **0.632** | **0.420 – 0.951** | | | | | \* | | 0.434 | | 0.128 – 1.476 | | |  | | | 1.444 | | 1.134 – 1.839 | | |  | | 1.013 | | | 0.622 – 1.651 | |  | | |
| (Intercept) | 206.56 | 0.004 – 1.05x107 | | | | |  | | 58.747 | | 0.000 – 5.30x106 | | | |  | 1.645 | | | 0.016 – 1.71x10² | | |  | | 4.028 | | | 0.000 – 2.72x104 | |  | | |
| Humidity | 0.952 | 0.830 – 1.092 | | | | |  | | 0.954 | | 0.823 – 1.107 | | | |  | 1.025 | | | 0.966 – 1.087 | | |  | | 0.983 | | | 0.879 – 1.099 | |  | | |
| Geographic valley |  |  | | | | |  | |  | |  | | | |  |  | | |  | | |  | |  | | |  | |  | | |
| (Intercept) | 8.303 | 2.740 – 2.515 | | | | | \*\*\* | | 1.767 | | 3.982 – 7.843 | | | |  | 10.123 | | | 5.260 – 19.480 | | |  | | 1.222 | | | 0.323 – 4.617 | |  | | |
| Valley 1(Ref.) |  |  | | | | |  | |  | |  | | | |  |  | | |  | | |  | |  | | |  | |  | | |
| Valley 2 | 0.523 | 1.420 – 1.927 | | | | |  | | 0.333 | | 4.41x10-2 – 2.523 | | | |  | 1.514 | | | 0.705 – 3.253 | | |  | | 0.403 | | | 0.073 – 2.241 | |  | | |
| Valley 3 | **0.007** | **7.49x10-4 – 5.56x10-2** | | | | | \*\*\* | | 0.000 | | 1.146 – 2.294 | | | |  | **0.547** | | | **0.218 – 0.375** | | | **\*\*** | | 1.684 | | | 0.303 – 9.356 | |  | | |
| Sample effort |  |  | | | | |  | |  | |  | | | |  |  | | |  | | |  | |  | | |  | |  | | |
| (Intercept) | 4.214 | 1.226 – 14.484 | | | | | \* | | 3.515 | | 9.454 – 13.070 | | | | \* | 8.760 | | | 5.499 – 13.955 | | |  | | 1.920 | | | 0.886 – 4.161 | |  | | |
| 2 days (Ref.) | - | - | | | | |  | | - | | - | | | |  | - | | | - | | |  | | - | | | - | |  | | |
| 3 days | 1.057 | 2.574 – 4.346 | | | | |  | | 0.024 | | 4.45x10-6– 138.26 | | | |  | **1.683** | | | **0.873 – 3.244** | | | **\*** | | **0.052** | | | **0.005 – 0.578** | | **\*** | | |
| IRR = Incidence Rate Ratios; CI = Confidence intervals; Db= ‘double’; Sig' = significance codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘#’ 0.1 ‘ ’ 1. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Table S4**. Selection models of risk factors associated with infection of *Angiostrongylus cantonensis* infection in terrestrial molluscs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Selection models* | *AICc*a | *Δ AIC*b | *wi*c | |
| ***Achatina fulica*** |  |  |  | |
| ***i. y ~ humidity*** | 103.0 | 0.00 | 0.60 | |
| *ii. y ~ water+garbage+humidity* | 103.8 | 0.77 | 0.40 | |
| ***Bulimulus tenuissimus*** |  |  |  | |
| ***i. y ~ sample effort*** | 92.6 | 0.00 | 0.43 | |
| *ii.y ~1* | 92.8 | 0.13 | 0.41 | |
| ***Sarasinula marginata*** |  |  |  | |
| ***i. y ~ construction material+valley*** | 109.7 | 0.00 | | 0.73 |
| *ii.y ~ water+construction material+valley* | 111.5 | 1.99 | | 0.26 |
| ***Subulina octona*** |  |  |  | |
| ***i. y ~ cumulative rain+sample effort*** | 180.4 | 0.00 | 0.71 | |
| ***ii. y ~*** *sample effort* | 182.2 | 1.82 | 0.28 | |

a AIC: Akaike information criterion (AIC);

b ΔAIC: Delta Scores of the Akaike information criterion (AIC);

c wi: Akaike model weight.

**Table S5**. Selection of multilevel models of risk factors associated with *Angiostrongylus cantonensis* infection in rats*.*

|  |  |  |  |
| --- | --- | --- | --- |
| *Models Selection* | *AIC*a | Δ*AIC*b | *wi*c |
| **Environmental** |  |  |  |
| ***i. log2(y) ~ water+cumulative rain + construction materials*** | 419 | 0.00 | 0.07 |
| *ii. log2(y) ~ water+construction material+food* | 419 | 0.08 | 0.06 |
| *iii. log2(y) ~ food* | 420 | 0.22 | 0.06 |
| *iv. log2(y) ~ water+cumulative rain + rubbish+ food* | 420 | 0.30 | 0.06 |
| *v. log2(y) ~ water+cumulative rain + rubbish* | 420 | 0.30 | 0.05 |
| *vi. log2(y) ~ water+food* | 420 | 0.40 | 0.05 |
| **Demography and body condition** |  |  |  |
| ***i. log2(y) ~ age+water+cumulative rain+construction material+Smi*** | 408 | 0.00 | 0.15 |
| *ii. log2(y) ~ age+water+construction material+Smi* | 409 | 0.25 | 0.13 |
| *iii. log2(y) ~ age+water+construction material+Smi+Wounds* | 409 | 0.46 | 0.12 |
| *iv. log2(y) ~ age+construction material+Smi* | 409 | 0.66 | 0.11 |
| *v. log2(y) ~ age+water+cumulative rain+Smi* | 409 | 0.71 | 0.10 |
| *vi. log2(y) ~ age+cumulative rain+Smi* | 410 | 0.87 | 0.09 |
| **Coinfection** |  |  |  |
| ***Models for infection*** | | | |
| ***i. log2(y) ~ age+cumulative rain+Smi*** | 416 | 0.00 | 0.21 |
| *ii. log2(y) ~ age+cumulative rain+construction material+Smi* | 417 | 0.06 | 0.20 |
| *iii. log2(y) ~ age+Smi* | 417 | 0.07 | 0.20 |
| *iv. log2(y) ~ age+cumulative rain+construction material+ Smi+Hymenolepis* spp. *presence* | 417 | 0.94 | 0.12 |
| *v. log2(y) ~ age+cumulative rain+ Smi+Hymenolepis* spp. *presence* | 418 | 1.67 | 0.08 |
| *vi. log2(y) ~ age+construction material+Smi* | 418 | 1.69 | 0.07 |
| ***Models for intensity of infection*** | | | |
| ***i. log2(y) ~ age+cumulative rain+Smi+Strongyloides* sp. *intensity+N.brasiliensis intensity + Sex: N.brasiliensis intensity*** | 378 | 0.00 | 0.26 |
| *ii. log2(y) ~ age+cumulative rain+Smi+Capillaria* sp. *intensity+Strongyloides* sp. *intensity+N.brasiliensis intensity + Sex: N.brasiliensis intensity* | 378 | 0.28 | 0.22 |
| *iii. log2(y) ~ cumulative rain+construction material+Smi+Capillaria* sp. *intensity+Hymenolepis* spp. *intensity +Strongyloides* sp. *intensity+N.brasiliensis intensity + Sex:N.brasiliensis intensity* | 379 | 1.22 | 0.14 |
| *iv. log2(y) ~ cumulative rain+construction material+Smi+Hymenolepis* spp. *Intensity +Strongyloides* sp. *intensity+N.brasiliensis intensity + Sex:N.brasiliensis intensity* | 379 | 1.23 | 0.14 |
| *v. log2(y) ~ cumulative rain+Smi+Capillaria* sp. *intensity+ Strongyloides* sp. *intensity+N.brasiliensis intensity + Sex:N.brasiliensis intensity* | 379 | 1.64 | 0.11 |
| *iv. log2(y) ~ age+cumulative rain+construction material+Smi+Capillaria* sp. *intensity+ Strongyloides* sp. *intensity+N.brasiliensis intensity + Sex:N.brasiliensis intensity* | 379 | 1.91 | 0.10 |
| aAIC: Akaike information criterion (AIC);  bΔAIC: Delta Scores of the Akaike information criterion (AIC);  cwi: Akaike model weight. |  |  |  |