**Supplementary Material**

**Supplementary Material S1:** List of families and genera with the values of abundance (N) and relative frequency (RF) of conformity of the suborders Anisoptera and Zygoptera recorded in the 30 streams sampled in the Capim river basin, in the municipality of Paragominas, Pará, Brazil.

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| --- | --- | --- | --- |
| **Family** | **Genera** | **N** | **RF (%)** |
| **Anisoptera** |  |  |  |
| Corduliidae | *Aeschnosoma* Selys. 1870 | 20 | 4.5 |
|  | *Lauromacromia* Geijskes. 1970 | 2 | 0.45 |
|  |  |  |  |
| Gomphidae | *Aphylla* Selys. 1854 | 3 | 0.676 |
|  | *Cacoides* Erichson. 1848 | 1 | 0.225 |
|  | *Cyanogomphus* selys. 1873 | 1 | 0..225 |
|  | *Ebegomphus* Needham. 1944 | 10 | 2.25 |
|  | *Erpetogomphus* Selys. 1858 | 6 | 1.35 |
|  | *Phyllocycla* Calvert. 1948 | 30 | 6.76 |
|  | *Phyllogomphoides* Belle. 1970 | 37 | 8.33 |
|  | *Progomphus* Selys. 1854 | 45 | 10.13 |
|  | *Zonophora* Selys. 1854 | 55 | 12.39 |
|  |  |  |  |
| Libellulidae | *Argyrothemis* Ris. 1909 | 14 | 3.15 |
|  | *Brechmorhoga* Kirby. 1894 | 6 | 1.35 |
|  | *Dasythemis* Karsch. 1890 | 3 | 0.676 |
|  | *Diastatops* Rambur. 1842 | 4 | 0.90 |
|  | *Dythemis* Calvet. 1906 | 1 | 0.225 |
|  | *Elasmothemis* Westfall. 1988 | 3 | 0.676 |
|  | *Elga* Ris. 1909 | 3 | 0.676 |
|  | *Erythrodiplax* Brauer. 1868 | 9 | 2.03 |
|  | *Fylgia* Kirby. 1889 | 10 | 2.25 |
|  | *Gynothemis*. Calvert in Ris. 1909 | 25 | 5.63 |
|  | *Oligoclada* Karsch. 1890 | 24 | 5.40 |
|  | *Orthemis* Hagen. 1861 | 5 | 1.13 |
|  | *Perithemis* Hagen. 1861 | 9 | 2.03 |
|  | *Planiplax* Muttkowski. 1910 | 2 | 0.45 |
| Aeshnidae | *Coryphaeschna* Williamson.1903 | 1 | 0.225 |
| **Zygoptera** |  |  |  |
| Calopterygidae | *Mnesarete/Hetaerina* | 8 | 1.80 |
|  |  |  |  |
| Coenagrionidae | *Acanthagrion* Selys. 1876 | 24 | 5.40 |
|  | *Argia* Rambur. 1842 | 24 | 5.40 |
|  | *Enallagma* Calvert. 1907 | 5 | 1.13 |
|  | *Epipleoneura* Williamson. 1915 | 22 | 4.95 |
|  | *Idioneura* Selys. 1860 | 1 | 0.225 |
|  | *Protoneura* Selys in Sagra. 1857 | 7 | 1.58 |
|  |  |  |  |
| Heteragrionidae | *Heteragrion* Selys. 1862 | 13 | 2.93 |
|  | *Oxystigma* Selys. 1862 | 5 | 1.13 |
|  |  |  |  |
| Perilestidae | *Perissolestes* Kennedy. 1941 | 5 | 1.13 |
|  |  |  |  |
| Polythoridae | *Chalcopteryx* Selys. 1853 | 1 | 0.225 |
|  |  |  |  |
| **Total** |  | **444** | **100** |

**Supplementary Material S2:** *Loadings* of the Redundancy Analysis with the local and regional predictors for the Odonata larvae assemblage structure in streams sampled in the Rio Capim river basin, on the municipality of Paragominas, Pará, Brazil.

|  |  |  |
| --- | --- | --- |
| **Variable** | **RDA1** | **RDA2** |
| Average intermediate woody canopy | -0.587 | 0.413 |
| Temperature | **-0.155** | **-0.354** |
| Average natural shelter (leaf bank and live roots) | **0.171** | **0.634** |
| Volume of wood in the streambed | **-0.366** | -0.069 |
| Percentage of algae | 0.080 | 0.088 |
| Proportion of shelter as excavated margin | -0.143 | -0.166 |
| Proportion of human impact per section | 0.493 | -0.372 |

**Supplementary Material S3:** Results of RDA correlations for composition of Odonata larvae of streams sampled in the Rio Capim river basin, Paragominas, Pará, Brazil. Bolds values are correlations higher than 0.1 and -0.1.

|  |  |  |
| --- | --- | --- |
| **Genera** | **RDA1** | **RDA2** |
| *Acanthagrion* | -0.096 | -0.075 |
| *Aeschnosoma* | 0.122 | 0.108 |
| *Aphylla* | -0.190 | 0.014 |
| *Argia* | 0.078 | -0.088 |
| *Argyrothemis* | 0.081 | 0.098 |
| *Brechmorhoga* | 0.003 | -0.072 |
| *Cacoides* | 0.000 | 0.015 |
| *Calopterygidae* | 0.024 | -0.057 |
| *Chalcopteryx* | 0.003 | 0.004 |
| *Coryphaeschna* | -0.002 | -0.024 |
| *Cyanogomphus* | 0.000 | 0.015 |
| *Dasythemis* | 0.054 | 0.004 |
| *Diastatops* | -0.004 | -0.027 |
| *Dythemis* | -0.002 | -0.024 |
| *Ebegomphus* | 0.010 | -0.022 |
| *Elasmothemis* | -0.004 | -0.042 |
| *Elga* | -0.025 | -0.007 |
| *Enallagma* | 0.047 | -0.001 |
| *Epigomphus* | 0.004 | -0.017 |
| *Epipleoneura* | -0.015 | 0.003 |
| *Erythrodiplax* | 0.033 | -0.117 |
| *Fylgia* | -0.109 | -0.061 |
| *Heteragrion* | 0.004 | 0.072 |
| *Idioneura* | 0.010 | -0.027 |
| *Lauromacromia* | 0.011 | -0.001 |
| *Gynothemis* | -0.614 | 0.149 |
| *Oligoclada* | -0.137 | 0.011 |
| *Orthemis* | 0.026 | -0.087 |
| *Oxystigma* | 0.037 | 0.000 |
| *Perilestes* | 0.046 | 0.052 |
| *Perithemis* | 0.020 | -0.037 |
| *Phyllocycla* | 0.183 | 0.097 |
| *Phyllogomphoides* | 0.005 | -0.017 |
| *Planiplax* | -0.006 | -0.010 |
| *Progomphus* | 0.261 | -0.374 |
| *Protoneura* | 0.057 | -0.021 |
| *Zonophora* | 0.426 | 0.362 |

**Supplementary Material S4.** Local habitat structure variables obtained from the protocol for the 30 streams sampled in the Rio Capim river basin, municipality of Paragominas, Pará, Brazil. Code, Mean and Standard deviation are informed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Categories of Local habitat variable** | **Habitat Structure Variable** | **Code** | **Mean** | **Standard deviation** |
| Channel morphology | Mean thalweg depth (cm) | XDEPTH\_T | 17.456 | 5.989 |
| Standard deviation thalweg depth (cm)  | XWIDTH | 17.021 | 5.667 |
| Channel bar width (m) | XBAR | 0.984 | 0.470 |
| Standard deviation width channel bars (m) | XBKF\_H | 4.304 | 3.623 |
| Mean height seasonal riverbed (m) | XWXD\_P | 6.534 | 6.139 |
| Wetted area section (width x depth) (m2) | XWD\_RAT\_P | 0.889 | 0.780 |
| Wetted area in Stretch (Width x Depth) (m2) | XWXD | 10.730 | 5.835 |
| Ratio width and depth in the section | XWD\_RAT | 4.823 | 4.888 |
| Angle margins (degrees) | XBKA | 4.124 | 2.907 |
| Mean distance excavated margins (m) | XUN | 26.367 | 14.870 |
| Substrate | Mean immersion (channel) (%) | XCEMBED | 50.499 | 15.719 |
| Immersion standard deviation (channel) (%) | VCEMBED | 48.158 | 18.611 |
| Bedrock s - flat rock (%) | PCT\_RL | 50.108 | 18.562 |
| Substrate <16 mm diameter - Transect and Mesotransect (%) | PCT\_SFGF | 16.068 | 18.472 |
| Total organic matter (%) | PCT\_ORG | 27.051 | 24.574 |
| Wood (%) | PCT\_WD | 45.244 | 24.642 |
| Concrete (%) | PCT\_RC | 34.614 | 29.529 |
| Fine litter (%) | PCT\_BF | 9.719 | 8.525 |
| Leaf bank (%) | PCT\_AL | 14.965 | 16.604 |
| Algae (%) | PCT\_MA | 15.102 | 18.653 |
| Macrophyte (%) | LSUB\_DMM | 458.232 | 983.288 |
| Hydraulic/Substrate | Log10 Subst. D50 | SUBDM(D50) | 693.938 | 1019.614 |
| SubDM(D50) | RP100 | 1.820 | 43.218 |
| Mean residual pools (m2 per 150m of canal) | RBS | 14.168 |  7.759 |
| Relative riverbed stability (critical diameter) | PCT\_PR | 54.844 |  32.808 |
|  |  |  |  |
| Log10 Relative riverbed stability (critical diameter) | PCT\_POOL | 56.778 | 34.057 |
| Channel unit (types of flow) | Impoundment pool (%) | SEQ\_FLO\_1 | 27.556 | 35.913 |
| All pool types | SEQ\_FLO\_2 | 1.634 | 4.097 |
| Sequence fast flow, smooth and pools (1 = Maximum heterogeneity, 0 = maximum homogeneity) | XCDENBK | 47.657 | 37.639 |
| Fast and slow flow sequence | VCDENBANK | 46.136 | 37.730 |
| Riparian vegetation coverage | Mean canopy margins (%) | XCL | 51.261 |  38.751 |
| Standard deviation canopy margins (%) | XCS | 8.365 | 5.880 |
| Mean canopy large trees | XMW | 18.289 | 11.089 |
| Mean canopy small trees | XMH | 16.468 | 7.554 |
| Mean sub woody grove | XGW | 12.372 | 6.971 |
| Mean sub grove herbs | XGH | 12.508 | 8.049 |
| Mean woody trail | XGB | 14.037 | 8.561 |
| Mean creeping herbs | XC | 8.106 | 8.727 |
| Mean soil exposed | XM | 24.590 | 15.997 |
| Mean canopy coverage | XG | 26.322 | 10.985 |
| Mean intermediate coverage | XCM | 23.917 | 12.686 |
| Mean low coverage | XCMW | 45.748 | 26.337 |
| Mean canopy intermediate | XCMG | 37.665 | 21.835 |
| Mean woody intermediate canopy | XCMGW | 65.614 | 37.660 |
| Mean total coverage | XPCAN | 48.568 | 27990 |
| Mean woody cover | C3W\_150 | 22.556 | 22.712 |
| Canopy presence by transect | C4W\_150 | 7.000 | 8.970 |
|  |  |  |  |
| Wood | Riverbed wood number / 150m - Size Class 3 | V3W\_150 | 3.882 | 8.678 |
| Riverbed wood number / 150m - Size Class 4 | V4W\_150 | 4.581 | 7.454 |
| Wood volume in riverbed / 150m - Size Class 3 | C3T\_150 | 26.978 | 26.032 |
| Wood volume in riverbed / 150m - Size Class 4 | C4T\_150 | 8.289 | 9.393 |
| Volume riverbed + Superior Wood / 150m - Size Class 3 | V3T\_150 | 11.677 | 14.704 |
| Volume riverbed + Superior Wood / 150m - Size Class 4 | V4T\_150 | 10.270 | 14.167 |
|  |  |  |  |
| Shelter | Mean shelter - small wood | XFC\_BRS | 16.924 | 21.335 |
| Mean shelter - living trees | XFC\_ROT | 11.629 | 12.108 |
| Mean Shelter - leaf bank | XFC\_LEB | 12.833 | 9.529 |
| Mean shelter - hanging vegetation | XFC\_OHV | 19.682 | 18.271 |
| Mean shelter - excavated margin | XFC\_UCB | 27.053 | 21.725 |
| Natural Shelter (leaf bank and live roots) | XFC\_LIF | 97.924 | 44.816 |
| Mean anthropogenic shelter (artificial structures) | XFC\_ANT | 92.250 | 44.122 |
| Mean large shelter | XFC\_BIG | 50.061 | 45.966 |
| Shelter ratio - filamentous algae | PFC\_ALG | 18.432 | 22.413 |
| Shelter ratio - Macrophyte | PFC\_AQM | 6.203 | 8.522 |
| Shelter ratio - living trees | PFC\_ROT | 0.673 | 0.323 |
| Shelter ratio - leaf bank | PFC\_LEB | 0.833 | 0.224 |
| Shelter ratio - hanging vegetation | PFC\_OHV | 0.791 | 0.314 |
| Shelter ratio - excavated margin | PFC\_UCB | 0.797 | 0.297 |
| Human impact | Proportion of human impact by section - Total | X\_HALL | 0.542 | 0.481 |
| Proportion of human agricultural impact by section - Total | X\_HAG | 0.445 | 0.415 |