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**Electronic Supplementary Material**

Zooplankton fluctuations in the surface waters of the estuary of a large subtropical urban river

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Table 1: Monthly abundance (individuals m-3, mean ± standard deviation) of each zooplankton taxa, total filtered water volume recorded from each cruise for all samples.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sampling month in 2014 | January | March | May | July | September | November |
| Total filtered volume (m3) | 2798 | 6257 | 5432 | 13211 | 3755 | 4638 |
| Myzozoa\ Dinophyceae\ Noctilucaceae |
| *Noctiluca scintillans* | 0 | 37.37 ± 22.54 | 42.86 ± 32.92 | 31.12 ± 53.26 | 18.62 ± 33.93 | 4.08 ± 9.12 |
| Coelenterata\ Cnidaria\ Medusozoa |
| Jellyfish | 0 | 3.91 ± 8.74 | 0 | 0 | 0 | 0 |
| Annelida\ Polychaeta |
| Polychaeta larva | 0 | 125.13 ± 279.79 | 17.23 ± 31.15 | 25.46 ± 35.59 | 0 | 0 |
| Chaetognatha\ Sagittidea\ Sagittidae |
| *Sagitta* spp. | 0 | 3.91 ± 8.74 | 6.72 ± 9.24 | 0 | 0 | 0 |
| Arthropoda\ Crustacea |
| Decapoda | 0.05 ± 0.11 | 43.22 ± 44.76 | 13.06 ± 18.01 | 124.04 ± 176.33 | 3.55 ± 4.85 | 16.12 ± 33.57 |
| Arthropoda\ Crustacea |
| Cladocera | 0 | 0 | 1.97 ± 4.4 | 0 | 0 | 0 |
| Arthropoda\ Crustacea\ Copepoda |
| Copepoda copepodites | 397.36 ± 576.43 | 0 | 26.61 ± 59.51 | 28.17 ± 57.39 | 0 | 167.71 ± 86.4 |
| Calanoida | 179.04 ± 162.77 | 633.46 ± 233.89 | 563.32 ± 610.54 | 910.52 ± 460.73 | 1163.45 ± 602.05 | 644.92 ± 395.45 |
| Cyclopoida | 55.41 ± 80.39 | 687.53 ± 320.48 | 120.32 ± 177.02 | 328.55 ± 348.7 | 23.87 ± 21.74 | 17.11 ± 21.46 |
| Harpacticoida | 0.07 ± 0.17 | 74.45 ± 166.48 | 45.98 ± 58.59 | 87.41 ± 127.87 | 4.13 ± 7.94 | 12 ± 11.2 |
| Mollusca\ Gastropoda\ Opisthobranchia |
| Pteropoda | 0 | 0 | 0 | 0.32 ± 0.71 | 0 | 0 |
| Chordata\ Urochordata |
| Appendicularia | 0 | 89.67 ± 131.84 | 67.27 ± 69.96 | 6.75 ± 10.73 | 0 | 0 |
| Chordate\ Vertebrata\ Pisces |
| Pisces larva | 0 | 3.91 ± 8.74 | 0.5 ± 1.11 | 0 | 0 | 0 |
| Others |
| Other larvae | 15.62 ± 15.21 | 64.41 ± 84.63 | 18.51 ± 23.42 | 70.35 ± 66.27 | 287.8 ± 168.4 | 139.4 ± 165.43 |

Table 2: Monthly abundance (individuals m-3, mean ± standard deviation) of copepods, relative abundance (RA, %), and occurrence ratio (OR, %) recorded from each cruise for all samples. Species with superscripts B = brackish, F = freshwater, M = marine.

|  |  |  |
| --- | --- | --- |
|  | Sampling month in 2014 | Total samples |
|  | January | March | May | July | September | November | Abundance | RA | OR |
| Scientific classification |  |  |  |  |  |  |  |  |  |
| Order Calanoida |  |  |  |  |  |  |  |  |  |
| Family Acartiidae |  |  |  |  |  |  |  |  |  |
| *Acartia* (*Odontacartia*) *pacifica* Steuer, 1915 M,B | 0 | 0 | 0 | 81.99 ± 162.72 | 143.54 ± 81.99 | 143.54 ± 81.99 | 42.8 ± 87.66 | 4.63  | 36.7  |
| *Acartia* sp. | 0 | 0 | 9.84 ± 22 | 43.33 ± 48.33 | 0 | 0 | 82.6 ± 233.19 | 8.93  | 30.0  |
| *Acartiella* sp. | 52.57 ± 110.08 | 0 | 0 | 0 | 0 | 0 | 8.76 ± 45.48 | 0.95  | 10.0  |
| Family Calanidae |  |  |  |  |  |  |  |  |  |
| *Canthocalanus pauper* (Giesbrecht, 1888)M | 0 | 0 | 1.45 ± 3.23 | 0 | 0.48 ± 1.07 | 0.48 ± 1.07 | 0.32 ± 1.38 | 0.03  | 6.7  |
| *Calanus sinicus* Brodsky, 1962 M | 0 | 3.23 ± 7.22 | 0 | 0 | 0 | 0 | 0.54 ± 2.95 | 0.06  | 3.3  |
| *Undinula vulgaris* (Dana, 1849) M | 0 | 0 | 1.45 ± 3.23 | 0 | 0 | 0 | 0.24 ± 1.32 | 0.03  | 3.3  |
| Family Centropagidae |  |  |  |  |  |  |  |  |  |
| *Centropages orsinii* Giesbrecht, 1889 M | 1.68 ± 3.76 | 0 | 0 | 2.03 ± 4.55 | 0 | 0 | 0.62 ± 2.37 | 0.07  | 6.7  |
| *Sinocalanus sinensis* (Poppe, 1889) B | 0 | 0 | 1.74 ± 3.89 | 0 | 0 | 0 | 0.29 ± 1.59 | 0.03  | 3.3  |
| Family Diaptomidae |  |  |  |  |  |  |  |  |  |
| *Mongolodiaptomus birulai* (Rylov, 1922) F | 0 | 0 | 0.98 ± 2.2 | 0 | 0 | 0 | 0.16 ± 0.9 | 0.02  | 3.3  |
| Family Euchaetidae |  |  |  |  |  |  |  |  |  |
| *Euchaeta concinna* Dana, 1849 M | 0 | 4.17 ± 9.32 | 0 | 0 | 0 | 0 | 0.69 ± 3.8 | 0.08  | 3.3  |
| Family Paracalanidae |  |  |  |  |  |  |  |  |  |
| *Acrocalanus gibber* Giesbrecht, 1888 M | 0 | 43.01 ± 59.37 | 29.73 ± 63.75 | 0 | 0 | 0 | 12.12 ± 36.96 | 1.31  | 13.3  |
| *Acrocalanus gracilis* Giesbrecht, 1888 M | 0 | 162.86 ± 162.88 | 36.66 ± 60.76 | 12.35 ± 16.92 | 0 | 0 | 35.31 ± 88.03 | 3.82  | 26.7  |
| *Acrocalanus* spp. | 0 | 0 | 2.8 ± 3.83 | 10.44 ± 23.34 | 1.1 ± 1.52 | 1.1 ± 1.52 | 4.57 ± 12.37 | 0.49  | 23.3  |
| *Bestiolina* n. sp. | 16.62 ± 37.15 | 0 | 250.21 ± 543 | 222.66 ± 227.2 | 971.01 ± 596.27 | 971.01 ± 596.27 | 268.67 ± 458.25 | 29.04  | 63.3  |
| *Parvocalanus elegans* Andronov, 1972 M | 0 | 0 | 0 | 3 ± 6.71 | 0 | 0 | 0.5 ± 2.74 | 0.05  | 3.3  |
| *Paracalanus aculeatus* Giesbrecht, 1888 M | 4.15 ± 9.29 | 94.07 ± 93.58 | 1.35 ± 3.02 | 0 | 1.55 ± 3.47 | 1.55 ± 3.47 | 16.85 ± 49.58 | 1.82  | 26.7  |
| *Paracalanus parvus* (Claus, 1863) M | 6.72 ± 15.02 | 220.92 ± 304.73 | 31.44 ± 56.42 | 0 | 0 | 0 | 43.18 ± 141.22 | 4.67  | 16.7  |
| *Paracalanus* spp. | 5.59 ± 7.91 | 90.09 ± 123.94 | 2.7 ± 6.05 | 24.01 ± 53.7 | 4.5 ± 4.64 | 4.5 ± 4.64 | 21.15 ± 59.83 | 2.29  | 30.0  |
| *Parvocalanus crassirostris* (Dahl F., 1894) M | 0 | 8.33 ± 18.64 | 101.4 ± 144.68 | 468.65 ± 679.54 | 30.98 ± 36.68 | 30.98 ± 36.68 | 101.56 ± 309.78 | 10.98  | 30.0  |
| *Parvocalanus* spp. | 0 | 0 | 22.98 ± 51.39 | 0 | 0 | 0 | 3.83 ± 20.98 | 0.41  | 3.3  |
| Family Pontellidae |  |  |  |  |  |  |  |  |  |
| *Calanopia elliptica* (Dana, 1849) M | 0 | 0 | 0 | 0 | 0.5 ± 1.13 | 0.5 ± 1.13 | 0.08 ± 0.46 | 0.01  | 3.3  |
| *Labidocera kroyeri* (Brady, 1883) M | 0 | 0 | 0 | 0 | 0.23 ± 0.52 | 0.23 ± 0.52 | 0.04 ± 0.21 | < 0.01 | 3.3  |
| Family Pseudodiaptomidae |  |  |  |  |  |  |  |  |  |
| *Pseudodiaptomus annandalei* Sewell, 1919 M,B,F | 0 | 0 | 0 | 0 | 8.05 ± 14.78 | 8.05 ± 14.78 | 1.34 ± 6.28 | 0.15  | 6.7  |
| *Pseudodiaptomus inopinus* Burckhardt, 1913 M,B,F | 0 | 6.77 ± 15.13 | 7.2 ± 16.1 | 0 | 0 | 0 | 2.33 ± 8.86 | 0.25  | 6.7  |
| Family Subeucalanidae |  |  |  |  |  |  |  |  |  |
| *Subeucalanus* spp. | 0 | 0 | 0 | 0 | 0.5 ± 1.13 | 0.5 ± 1.13 | 0.08 ± 0.46 | 0.01  | 3.3  |
| Family Temoridae |  |  |  |  |  |  |  |  |  |
| *Temora turbinata* (Dana, 1849) M | 0 | 0 | 61.39 ± 56.82 | 42.05 ± 59.75 | 0.99 ± 1.4 | 0.99 ± 1.4 | 17.41 ± 39.74 | 1.88  | 30.0  |
| Family Tortanidae |  |  |  |  |  |  |  |  |  |
| *Tortanus* (*Eutortanus*) *dextrilobatus* Chen & Zhang, 1965 M  | 25.72 ± 36.56 | 0 | 0 | 0 | 0 | 0 | 4.29 ± 16.72 | 0.46  | 6.7  |
| *Tortanus* (*Eutortanus*) *derjugini* Smirnov, 1935 M | 2.23 ± 5 | 0 | 0 | 0 | 0 | 0 | 1.48 ± 4.65 | 0.16  | 10.0  |
| *Tortanus* spp. | 63.76 ± 89.12 | 0 | 0 | 0 | 0 | 0 | 10.63 ± 40.98 | 1.15  | 6.7  |
| Order Cyclopoida |  |  |  |  |  |  |  |  |  |
| Family Corycaeidae |  |  |  |  |  |  |  |  |  |
| *Ditrichocorycaeus erythraeus* (Cleve, 1904) M | 0 | 7.4 ± 10.26 | 0 | 0 | 0 | 0 | 1.23 ± 4.73 | 0.13  | 6.7  |
| *Corycaeus* spp. | 0 | 602.11 ± 300.12 | 14.37 ± 32.13 | 3 ± 6.71 | 0.5 ± 1.13 | 0.5 ± 1.13 | 103.33 ± 253.12 | 11.17  | 26.7  |
| *Ditrichocorycaeus affinis* (McMurrich, 1916) M | 0 | 19.37 ± 43.31 | 0 | 0 | 0 | 0 | 3.23 ± 17.68 | 0.35  | 3.3  |
| *Ditrichocorycaeus dahli* (Tanaka, 1957) M | 0 | 0 | 0 | 0 | 0.81 ± 1.82 | 0.81 ± 1.82 | 0.14 ± 0.74 | 0.01  | 3.3  |
| *Onychocorycaeus catus* (Dahl F., 1894) M | 0 | 0 | 0 | 3 ± 6.71 | 0 | 0 | 0.5 ± 2.74 | 0.05  | 3.3  |
| Family Cyclopidae |  |  |  |  |  |  |  |  |  |
| *Apocyclops* sp. | 0.04 ± 0.08 | 0 | 1.97 ± 4.4 | 0 | 0 | 0 | 1.79 ± 7.31 | 0.19  | 13.3  |
| Family Oithonidae |  |  |  |  |  |  |  |  |  |
| *Dioithona rigida* (Giesbrecht, 1896) M | 0 | 15.75 ± 35.22 | 0.08 ± 0.18 | 28.6 ± 29.22 | 0 | 0 | 7.41 ± 20.39 | 0.80  | 16.7  |
| *Oithona attenuata* Farran, 1913 M,B,F | 0 | 0 | 3.32 ± 4.67 | 49.09 ± 77.2 | 0 | 0 | 9.01 ± 34.07 | 0.97  | 20.0  |
| *Oithona dissimilis* Lindberg, 1940 M | 0 | 0 | 64.21 ± 125.37 | 103.34 ± 137.09 | 0 | 0 | 27.93 ± 80.66 | 3.02  | 20.0  |
| *Oithona simplex* Farran, 1913 M,B,F | 45.3 ± 62.68 | 0 | 14.37 ± 32.13 | 41.76 ± 93.38 | 0 | 0 | 16.91 ± 47.77 | 1.83  | 13.3  |
| *Oithona* spp. | 10.08 ± 22.53 | 42.91 ± 84.77 | 20.55 ± 38.15 | 94.54 ± 209.79 | 21.32 ± 17.41 | 21.32 ± 17.41 | 32.68 ± 91.3 | 3.53  | 46.7  |
| Family Oncaeidae |  |  |  |  |  |  |  |  |  |
| *Oncaea venusta* Philippi, 1843 M | 0 | 0 | 1.45 ± 3.23 | 5.22 ± 11.67 | 1.23 ± 1.74 | 1.23 ± 1.74 | 1.32 ± 4.92 | 0.14  | 13.3  |
| Order Harpacticoida |  |  |  |  |  |  |  |  |  |
| Family Harpacticidae |  |  |  |  |  |  |  |  |  |
| *Tigriopus japonicus* Mori, 1938 M | 0 | 3.38 ± 7.57 | 0 | 0 | 0 | 0 | 0.56 ± 3.09 | 0.06  | 3.3  |
| Family Tachidiidae |  |  |  |  |  |  |  |  |  |
| *Tachidius* (*Tachidius*) *discipes* Giesbrecht, 1881 M.B | 0.07 ± 0.17 | 23.69 ± 52.97 | 1.97 ± 4.4 | 0 | 0 | 0 | 5.38 ± 21.77 | 0.58  | 20.0  |
| *Euterpina acutifrons* (Dana, 1847) M.B | 0 | 47.38 ± 105.94 | 44.01 ± 60.25 | 87.41 ± 127.87 | 4.13 ± 7.94 | 4.13 ± 7.94 | 31.39 ± 73.21 | 3.39  | 36.7  |