**SUPLEMENTARY INFORMANTION**

Table S1. The various forms of nitrogen concentration and other physicochemical characteristics of the water column of Lake Svetloe in different seasons of the year. All concentrations are given in µM/L (for the nitrogen compounds µmol of nitrogen in L)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **interval depth, m** | **NH4** |  | **NO2** |  | **NO3** |  | **DIN** |  | **Norg** |  | **TN** |  | **O2** |  | **pH** |  | **T, 0C** |  |
| min | max | min | max | min | max | min | max | min | max | min | max | min | max | min | max | min | max |
| med |  | med |  | med |  | med |  | med |  | med |  | med |  | med |  | med |  |
| **Winter**  **(December - April)** | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-5 | 0.2 | 1.9 | 0.00 | 0.44 | 4 | 18 | 6 | 20 | 0.0007 | 24.0277 | 12 | 34 | 247 | 414 | 7.2 | 8.1 | 0.6 | 3.1 |
|  | 1.1 |  | 0.05 |  | 8 |  | 9 |  | 7.1721 |  | 16 |  | 331 |  | 7.8 |  | 1.9 |  |
| 5-10 | 0.2 | 1.4 | 0.00 | 0.18 | 4 | 11 | 4 | 12 | 3 | 20 | 13 | 28 | 248 | 418 | 7.2 | 8.4 | 3.0 | 3.6 |
|  | 0.6 |  | 0.02 |  | 6 |  | 7 |  | 7 |  | 14 |  | 322 |  | 7.7 |  | 3.3 |  |
| 10-15 | 0.1 | 1.5 | 0.0 | 0.2 | 5 | 10 | 5 | 11 | 3 | 15 | 10 | 21 | 176 | 374 | 7.2 | 7.9 | 3.3 | 4.0 |
|  | 0.7 |  | 0.0 |  | 7 |  | 8 |  | 8 |  | 14 |  | 224 |  | 7.8 |  | 3.5 |  |
| 15-20 | 0.03 | 4.00 | 0.000 | 0.419 | 4 | 15 | 6 | 16 | 3 | 21 | 11 | 30 | 6 | 306 | 7.1 | 7.7 | 3.5 | 4.1 |
|  | 0.61 |  | 0.008 |  | 8 |  | 9 |  | 6 |  | 16 |  | 28 |  | 7.4 |  | 3.7 |  |
| 20-25 | 4 | 135 | 0.04 | 1.15 | 3 | 12 | 10 | 145 | 4 | 111 | 22 | 195 | 0 | 14 | 7.1 | 7.8 | 3.5 | 4.0 |
|  | 52 |  | 0.51 |  | 6 |  | 61 |  | 26 |  | 92 |  | 0 |  | 7.5 |  | 3.7 |  |
| 25-30 | 111 | 199 | 0.2 | 1.8 | 5 | 14 | 122 | 210 | 31 | 263 | 164 | 280 | 0 | 0 | 7.0 | 7.7 | 3.5 | 3.7 |
|  | 152 |  | 1.2 |  | 10 |  | 165 |  | 79 |  | 245 |  | 0 |  | 7.3 |  | 3.6 |  |
| 30-35 | 96 | 211 | 0.4 | 2.1 | 5 | 18 | 107 | 226 | 32 | 271 | 232 | 309 | 0 | 0 | 6.8 | 7.5 | 3.5 | 3.7 |
|  | 154 |  | 1.2 |  | 11 |  | 169 |  | 89 |  | 260 |  | 0 |  | 7.3 |  | 3.6 |  |
| 35-bott. | 87 | 221 | 0.3 | 2.0 | 5 | 23 | 103 | 243 | 24 | 280 | 236 | 311 | 0 | 0 | 6.8 | 7.6 | 3.5 | 3.7 |
|  | 175 |  | 1.2 |  | 11 |  | 187 |  | 107 |  | 283 |  | 0 |  | 7.4 |  | 3.6 |  |
| **Spring**  **(May)** | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-5 | 0.1 | 1.1 | 0.03 | 0.16 | 4 | 6 | 5 | 7 | 2 | 8 | 9 | 13 | 343 | 417 | 7.0 | 7.4 | 6.5 | 9.8 |
|  | 0.6 |  | 0.09 |  | 6 |  | 6 |  | 5 |  | 12 |  | 368 |  | 7.1 |  | 8.2 |  |
| 5-10 | 0.5 | 1.4 | 0.00 | 0.11 | 2 | 7 | 4 | 8 | 2 | 9 | 9 | 15 | 326 | 423 | 7.0 | 7.6 | 3.9 | 4.9 |
|  | 1.1 |  | 0.05 |  | 5 |  | 6 |  | 8 |  | 12 |  | 384 |  | 7.3 |  | 4.6 |  |
| 10-15 | 0.3 | 3.3 | 0.00 | 0.06 | 2 | 12 | 5 | 12 | 3 | 10 | 15 | 16 | 137 | 374 | 6.9 | 7.6 | 3.4 | 3.7 |
|  | 0.4 |  | 0.04 |  | 4 |  | 5 |  | 7 |  | 16 |  | 351 |  | 7.3 |  | 3.6 |  |
| 15-20 | 0.2 | 2.3 | 0.0 | 0.1 | 4 | 13 | 5 | 13 | 0 | 15 | 14 | 20 | 44 | 272 | 6.8 | 7.6 | 3.5 | 3.8 |
|  | 0.6 |  | 0.0 |  | 8 |  | 8 |  | 7 |  | 17 |  | 112 |  | 7.6 |  | 3.7 |  |
| 20-25 | 1 | 150 | 0.09 | 1.23 | 3 | 9 | 8 | 158 | 15 | 100 | 24 | 205 | 0 | 40 | 6.8 | 7.5 | 3.7 | 3.8 |
|  | 51 |  | 0.51 |  | 7 |  | 59 |  | 38 |  | 119 |  | 4 |  | 7.5 |  | 3.8 |  |
| 25-30 | 117 | 219 | 0.3 | 1.5 | 6 | 11 | 126 | 227 | 56 | 112 | 232 | 255 | 0 | 0 | 6.8 | 7.3 | 3.6 | 3.6 |
|  | 149 |  | 0.4 |  | 7 |  | 161 |  | 88 |  | 237 |  | 0 |  | 7.2 |  | 3.6 |  |
| 30-35 | 155 | 240 | 0.6 | 1.0 | 7 | 10 | 163 | 251 | 29 | 84 | 235 | 247 | 0 | 0 | 7.1 | 7.1 | 3.6 | 3.6 |
|  | 185 |  | 0.9 |  | 9 |  | 195 |  | 57 |  | 241 |  | 0 |  | 7.1 |  | 3.6 |  |
| 35-bott. | 146 | 206 | 0.5 | 1.7 | 7 | 9 | 155 | 216 | 37 | 114 | 219 | 269 | 0 | 0 | 6.8 | 7.2 | 3.6 | 3.6 |
|  | 174 |  | 0.9 |  | 8 |  | 182 |  | 75 |  | 244 |  | 0 |  | 7.0 |  | 3.6 |  |
| **Summer**  **(July - August)** | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-5 | 0.1 | 3.3 | 0.00 | 0.06 | 3 | 11 | 4 | 12 | 1 | 18 | 10 | 27 | 302 | 317 | 7.8 | 7.9 | 14.1 | 20.0 |
|  | 0.7 |  | 0.00 |  | 6 |  | 6 |  | 8 |  | 13 |  | 317 |  | 7.8 |  | 16.3 |  |
| 5-10 | 0.4 | 0.8 | 0.000 | 0.071 | 4 | 13 | 5 | 14 | 6 | 7 | 10 | 15 | 307 | 456 | 7.4 | 8.0 | 4.1 | 9.4 |
|  | 0.7 |  | 0.005 |  | 8 |  | 9 |  | 7 |  | 11 |  | 403 |  | 7.6 |  | 6.1 |  |
| 10-15 | 0.2 | 0.8 | 0.00 | 0.04 | 2 | 6 | 3 | 6 | 4 | 6 | 7 | 24 | 264 | 339 | 7.2 | 7.8 | 3.5 | 4.5 |
|  | 0.6 |  | 0.02 |  | 5 |  | 6 |  | 4 |  | 10 |  | 302 |  | 7.3 |  | 3.9 |  |
| 15-20 | 0.4 | 1.4 | 0.000 | 0.101 | 2 | 12 | 3 | 13 | 3 | 43 | 9 | 46 | 6 | 127 | 6.8 | 7.6 | 3.6 | 4.0 |
|  | 0.7 |  | 0.004 |  | 6 |  | 7 |  | 7 |  | 12 |  | 43 |  | 7.0 |  | 3.9 |  |
| 20-25 | 4 | 112 | 0.2 | 1.5 | 3 | 10 | 9 | 123 | 15 | 107 | 24 | 184 | 0 | 13 | 7.0 | 7.7 | 3.5 | 4.0 |
|  | 78 |  | 0.6 |  | 7 |  | 85 |  | 45 |  | 119 |  | 0 |  | 7.1 |  | 3.7 |  |
| 25-30 | 119 | 190 | 0.5 | 1.8 | 5 | 15 | 163 | 197 | 88 | 246 | 199 | 298 | 0 | 0 | 6.8 | 7.2 | 3.5 | 3.7 |
|  | 153 |  | 0.9 |  | 10 |  | 167 |  | 101 |  | 262 |  | 0 |  | 7.0 |  | 3.6 |  |
| 30-35 | 163 | 195 | 0.7 | 1.8 | 5 | 14 | 176 | 201 | 43 | 260 | 244 | 274 | 0 | 0 | 6.9 | 7.2 | 3.6 | 3.7 |
|  | 195 |  | 1.3 |  | 8 |  | 201 |  | 151 |  | 259 |  | 0 |  | 7.0 |  | 3.6 |  |
| 35-bott. | 130 | 193 | 0.4 | 1.7 | 5 | 14 | 184 | 198 | 42 | 250 | 180 | 276 | 0 | 0 | 6.7 | 7.3 | 3.5 | 3.7 |
|  | 175 |  | 0.8 |  | 10 |  | 190 |  | 146 |  | 252 |  | 0 |  | 7.0 |  | 3.6 |  |
| **Autumn**  **(September – October)** | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-5 | 0.8 | 3.5 | 0.00 | 0.11 | 2 | 12 | 4 | 13 | 3 | 13 | 12 | 18 | 344 | 443 | 7.0 | 8.8 | 5.3 | 11.3 |
|  | 1.5 |  | 0.05 |  | 5 |  | 8 |  | 7 |  | 16 |  | 354 |  | 7.8 |  | 8.3 |  |
| 5-10 | 0.7 | 2.0 | 0.00 | 0.11 | 2 | 7 | 3 | 9 | 8 | 11 | 12 | 18 | 319 | 468 | 7.3 | 8.8 | 5.3 | 11.3 |
|  | 1.0 |  | 0.07 |  | 3 |  | 4 |  | 10 |  | 15 |  | 361 |  | 7.9 |  | 8.0 |  |
| 10-15 | 0.5 | 1.5 | 0.00 | 0.11 | 4 | 9 | 5 | 10 | 3 | 10 | 9 | 38 | 224 | 422 | 7.3 | 8.2 | 5.2 | 6.0 |
|  | 0.8 |  | 0.07 |  | 5 |  | 6 |  | 7 |  | 13 |  | 372 |  | 7.8 |  | 5.3 |  |
| 15-20 | 0.3 | 1.6 | 0.00 | 0.10 | 3 | 12 | 4 | 13 | 4 | 16 | 9 | 27 | 4 | 106 | 6.7 | 7.7 | 4.2 | 4.4 |
|  | 1.0 |  | 0.08 |  | 4 |  | 6 |  | 6 |  | 10 |  | 91 |  | 7.4 |  | 4.3 |  |
| 20-25 | 1 | 95 | 0.0 | 1.2 | 3 | 13 | 4 | 105 | 15 | 75 | 19 | 181 | 0 | 9 | 6.8 | 7.9 | 3.7 | 4.1 |
|  | 77 |  | 0.6 |  | 8 |  | 87 |  | 30 |  | 125 |  | 0 |  | 7.5 |  | 3.7 |  |
| 25-30 | 117 | 193 | 0.0 | 1.8 | 4 | 15 | 122 | 204 | 40 | 133 | 241 | 293 | 0 | 0 | 6.7 | 7.7 | 3.5 | 3.6 |
|  | 145 |  | 0.5 |  | 11 |  | 158 |  | 109 |  | 245 |  | 0 |  | 7.3 |  | 3.6 |  |
| 30-35 | 144 | 144 | 0.4 | 1.7 | 16 | 16 | 161 | 161 | 96 | 96 | 257 | 293 | 0 | 0 | 7.3 | 7.4 | 3.5 | 3.5 |
|  | 144 |  | 1.0 |  | 16 |  | 161 |  | 96 |  | 275 |  | 0 |  | 7.4 |  | 3.5 |  |
| 35-bott. | 108 | 178 | 0.003 | 1.641 | 4 | 16 | 113 | 191 | 82 | 160 | 244 | 273 | 0 | 0 | 6.7 | 7.6 | 3.5 | 3.6 |
|  | 152 |  | 0.524 |  | 12 |  | 166 |  | 91 |  | 263 |  | 0 |  | 7.3 |  | 3.6 |  |