**Appendix**

**Table S1 Geographic location information and environmental conditions of sampling points**

|  |  |  |  |
| --- | --- | --- | --- |
| Sampling points | Longitude | Latitude | Environmental conditions |
| S1 | 122.5456 | 39.5689 | The water environment is moderately polluted |
| S2 | 122.4975 | 39.8147 | Located at the outlet of the reservoir, the bottom of the river is made of SLATE material, and there are submerged plants on the bank |
| S3 | 122.5333 | 40.0592 | The water environment is moderately polluted, a lot of sediment is excavated, and there is a stink of manure |
| S4 | 122.1808 | 39.3494 | The water environment is slightly polluted, the station has a dam to control the water volume of the river, and there are few surrounding villages |
| S5 | 122.0603 | 39.6225 | Rivers on the outskirts of cities are becoming heavily polluted from moderately polluted |
| S6 | 122.2803 | 39.7444 | The water quality is clean and the sand content is high |
| S7 | 122.0592 | 39.2039 | The river is heavily polluted, and there are sewage outlets from steel mills nearby |
| S8 | 122.0083 | 39.2575 | The water environment is moderately polluted, and there are a few villages around |
| S9 | 121.9358 | 39.2950 | The water environment is moderately polluted, there are villages and farmlands around, and there are sewage outlets upstream |
| S10 | 121.5992 | 39.6183 | The water environment is moderately polluted, with municipal garbage and sewage flowing into the river |
| S11 | 121.7383 | 39.6942 | The water environment is moderately polluted |
| S12 | 121.9978 | 39.7286 | The water environment is moderately polluted with traces of grazing |
| S13 | 122.1042 | 39.8247 | The water environment changes from moderate pollution to severe pollution, the station is located in the urban river, there is domestic sewage discharge phenomenon |
| S14 | 123.1708 | 39.7714 | The water environment is slightly polluted, and there are a few farmland and villages |
| S15 | 122.9725 | 40.0578 | The water environment is relatively clean, and there is no other pollution except for a few villages |
| S16 | 123.1250 | 40.0986 | The water environment is slightly polluted, and there are a few villages |
| S17 | 122.9897 | 39.6742 | The water environment is seriously polluted, and there is a lot of silt in the river |
| S18 | 122.9531 | 39.7578 | The water environment is lightly polluted and only a few people live there |
| S19 | 122.9081 | 39.8344 | The water is clear and slightly polluted |

**Table S2 Lists of phytoplankton used for RDA ranking**

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Latin Name | Code | Latin Name |
|  | *Bacillariophyta* |  | *Chlorophyta* |
| 1 | *Melosira granulata* | 23 | *Chlamydomonas simplex* |
| 2 | *Stauroneis anceps* | 24 | *Ankistrodesmus angustus* |
| 3 | *Cyclotella meneghiniana* | 25 | *Westellopsis sp.* |
| 4 | *Synedra ulna* | 26 | *Scenedesmus quadricauda* |
| 5 | *Synedra acus* | 27 | *Scenedesmus bijugayus* |
| 6 | *Fragilaria capucina* | 28 | *Crucigenia tetrapedia* |
| 7 | *Nitzschia palea* | 29 | *Chlorella vulgaris* |
| 8 | *Nitzschia linearis* | 30 | *Oocystis solitaria* |
| 9 | *Nitzschia amphibia* | 31 | *Chodatella quadriseta* |
| 10 | *Navicula tuscula* | 32 | *Kirchneriella obesa* |
| 11 | *Navicula simplex* |  | *Euglenophyta* |
| 12 | *Navicula pupula* | 33 | *Euglena oxyuris* |
| 13 | *Navicula radiosq* | 34 | *Euglena pisciformis* |
| 14 | *Navicula radiosq var. subalpina Cl.-Eul.* | 35 | *Euglena caudata* |
|  |
| 15 | *Diatoma vulgare* |  | *Cryptophyta* |
| 16 | *Cymbella tumida* | 36 | *Cryptomonas ovata* |
| 17 | *Cymbella cymbiformis* | 37 | *Cryptomonas erosa* |
| 18 | *Cymbella parva* | *Cyanophyta* |
| 19 | *Gomphonema turris* | 38 | *Merismopedia elegans* |
| 20 | *Gomphonema constrictum var.capitata* |  | *Xanthophyta* |
|  |
| 21 | *Diploneis puella* | 39 | *Ophiocytium parvulum* |  |
| 22 | *Pinnularia viridis* |  |

**Table S3 Lists of zooplankton used for CCA ranking**

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Latin Name | Code | Latin Name |
|  | Protozoa |  | *Rotifer* |
| 1 | *Difflugia urceolata* | 8 | *Brachionus calyciflorus* |
| 2 | *Difflugia corona* | 9 | *Brachionus quadridentatus* |
| 3 | *Difflugia acuminata* | 10 | *Keratella cochlearis* |
| 4 | *Trinema enchelys* | 11 | *Polyarthra dolichoptera* |
| 5 | *Difflugia globulosa* |  | *Copepoda* |
| 6 | *Arcella discoides* | 13 | *Nauplii* |
| 7 | *Difflugia oblonga* | 14 | *Limnocletodes angustodes* |
|  | *Cladocera* |  |  |
| 12 | *Bosmina longirostris* |  |  |

**Table S4 Lists of macrobenthos used for CCA ranking**

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Latin Name | Code | Latin Name |
|  | Aquatic insect | 12 | *Branchiura sowerbyi* |
| 1 | *Cinygmina* sp. | 13 | *Aulodrilus prothecatus* |
| 2 | *Baetis* sp. | 14 | *Haemopis* *gracilis* |
| 3 | *Caetis* sp. | 15 | *Herpobdella ocroculata* |
| 4 | *Hydropsyche sp.* |  | Shelled animal |
| 5 | *Cheumatopsyche brevilineata* | 16 | *Palaemonetes sinensis* |
|  |
| 6 | *Micronecta guttata* | 17 | *Cardina denticulate sinensis* |  |
|  |
| 7 | *Glyptotendipes cauliginellus* |  | Mollush |  |
|  |
| 8 | *Cricotopus bicinctus* | 19 | *Radix swinhoei* |  |
| 9 | *Deielia phaon* | 20 | *Radix ovata* |  |
| 10 | *Ischnura senegalensis* | 21 | *Parafossarulus striatulus* |  |
|  | Annulata | 22 | *Corbicula nitens* |  |
| 11 | *Limnodrilus hoffmeisteri* |  |