Appendix A: The spatial−temporal distribution patterns of standardized environmental factors data. (temperature(Temp), pH, salinity(Sal), chemical oxygen demand (COD), suspended matter concentration (SS), dissolved inorganic phosphorus (DIP), dissolved inorganic nitrogen (DIN) of the bottom water, sediment grain size(Sand, Silt, Clay), the potential ecological risk index (RI) and mean effects range-median (ERM) quotient (MERMQ))



Appendix B: Species list and their ecological group assignation in Rongjiang estuary.

|  |  |
| --- | --- |
|  |   |
| Phylum | Class | Order | Family | Genus | Species | Ecological group (EG) |
| Annelida | Oligochaeta | Tubificida | Tubificidae | Limnodrilus | *Limnodrilus hoffmeisteri* | Ⅴ |
| Annelida | Oligochaeta | Tubificida | Tubificidae | Branchiura  | *Branchiura sowerbyi* | Ⅳ |
| Annelida | Polychaeta | Eunicida | Onuphidae | Diopatra | *Diopatra chiliensis* | Ⅱ |
| Annelida | Polychaeta | Capitellida | Capitellidae | Heteromastus | *Heteromastus filiformis* | Ⅳ |
| Annelida | Polychaeta | Sabellida | Sabellidae | Laonome  | *Laonome* sp. | Ⅱ |
| Annelida | Polychaeta | Spionida | Spionidae | Paraprionospio  | *Paraprionospio pinnata* | Ⅳ |
| Annelida | Polychaeta | Phyllodocida  | Glyceridae | Glycera  | *Glycera tesselata* | Ⅱ |
| Annelida | Polychaeta | [Phyllodocida](http://www.marinespecies.org/aphia.php?p=taxdetails&id=892) | Nephtyidae | Micronephthys  | *Micronephthys oligobranchia* | Ⅱ |
| Mollusca | Bivalvia | Myoida | Corbulidae | Potamocorbula | *Potamocorbula laevis* | Ⅴ |
| Mollusca | Gastropoda | Littorinimorpha  | Iravadiidae | Iravadia | *Iravadia ornata* | Ⅰ |
| Mollusca | Gastropoda | Littorinimorpha  | Iravadiidae | Iravadia | *Iravadia* sp. | Ⅰ |
| Mollusca | Gastropoda | Mesogastropoda | Viviparidae | Filopaludina  | *Filopaludina bengalensis* | not assigned |
| Mollusca | Scaphopoda | Dentaliida | Dentaliidae | Striodentalium | *Striodentalium chinensis* | Ⅰ |
| Arthropoda | Malacostraca | Decapoda | Alpheidae | Alpheus  | *Alpheus* sp. | II |
| Arthropoda | Malacostraca | Decapoda | Grapsidae | Hemigrapsus  | *Hemigrapsus sinensis*  | II |
| Arthropoda | Malacostraca | Decapoda | Palaemonidae | Palaemon  | *Palaemon serrifer* | Ⅰ |
| Arthropoda | Malacostraca | Ingolfiellida | Ingolfiellidae | Paranthura  | *Paranthura japonica* | Ⅲ |
| Arthropoda | Malacostraca | Amphipoda | Corophiidae | Sinocorophium  | *Sinocorophium sinensis* | Ⅲ |
| Echiura | Echiurida | Echiuroinea | Echiuridae | Listriolobus | *Listriolobus brevirostris* | Ⅲ |
| Chordata | Osteichthyes | Perciformes  | Taenioididae | Odontamblyopus | *Odontamblyopus rubicundus* | Ⅳ |
| Chordata | Osteichthyes | Perciformes  | Gobiidae | Trypauchen | *Trypauchen vagina* | not assigned |
| Nemertea | Anopla | Heteronemertea | Lineidae | Cerebratulina | *Cerebratulina* sp. | Ⅲ |

Appendix C: Ecological status using biotic indices based on macrobenthic invertebrates for Rongjiang estuary in two seasons.

|  |  |  |  |
| --- | --- | --- | --- |
| Sampling sites | AMBI | M-AMBI | TD index  |
| Summer | 　 | 　 | 　 |
| S2 | Good | High | Good |
| S4 | Good | Good | Poor |
| S5 | Good | High | Good |
| S6 | Poor | Bad | Poor |
| S7 | Good | Poor | Poor |
| S8 | Moderate | Poor | Poor |
| S9 | High | Good | Good |
| Winter |  |  |  |
| S1 | Moderate | Good | Poor |
| S2 | Moderate | Good | Poor |
| S3 | Good | Poor | Poor |
| S4 | Good | Good | Poor |
| S5 | Good | Poor | Poor |
| S6 | Good | Poor | Poor |
| S7 | Poor | Good | Good |
| S8 | Good | Poor | Poor |
| S9 | Moderate | Moderate | Poor |
| S10 | Good | High | Good |
| S11 | Moderate | Bad | Poor |