

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Technical guidelines for biodiversity monitoring freshwater
benthic macroinvertebrates
(English Translation)**

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Foreword

To implement the "People's Republic of China Environmental Protection Law", "People's Republic of China Wild Animal Protection Law" to regulate Our observations of biological diversity, the development of this standard.

This standard specifies in freshwater bodies of water and include hydrostatic water biomes diversity of benthic macroinvertebrates Observation techniques and methods of sample layout, quality assurance sample collection methods, qualitative and quantitative analysis and observation and so we made the corresponding provisions and instructions.

The Standard Appendix A, B, C, D, E, F, G, H are informative appendix.

This standard is the first release.

This standard is developed by the Ministry of Environmental Protection Science, Technology organization.

Drafting of this standard. Nanjing Normal University, Nanjing Institute of Environmental Sciences Department of Environmental Protection.

This standard MEP October 31, 2014 for approval.

This standard since January 1, 2015 implementation.

The standard explanation by the Ministry of Environmental Protection.

1 Observation techniques guide the biodiversity of freshwater benthic macroinvertebrates

1 Scope

This standard specifies the freshwater benthic macroinvertebrates diversity observation

main contents, technical requirements and methods.

This standard applies to the People's Republic of China within the scope of observation freshwater benthic invertebrate diversity.

2 Normative references

This standard refers to the contents of the following documents or the terms. For undated references, the latest edition of to this standard.

GB/T 7714 after bibliographic references packet rules GB/T 8170 repair value expressed about the rules and limit values and judgment HJ 623 regional evaluation standards Biodiversity HJ 628 genetic resources collection technical specification (Trial)

3 Terms and Definitions

The following terms and definitions apply to this standard.

Macroinvertebrates macroinvertebrate Refers to an individual can not be 500 µm aperture sieve invertebrates (including some individuals in the early stages of the life history of a small animal).

Freshwater benthic macroinvertebrates freshwater benthic macroinvertebrate it refers to all or at least a period of the life cycle in inland freshwater habitats (including water and still water) or bottom surface of a body of water the bottom of the matrix macroinvertebrates. Including Cnidaria (Cnidaria, also known as cnidarians door Coelenterata), Platyhelminthes (Platyhelminthes), linear phylum (Nematomorpha), nematode phylum (Nemata), Annelida (Annelida), Mollusca (Mollusca) and Arthropoda (Arthropoda) animal.

Density

Refers to some kind of (class) the number of individuals of all animals per unit area.

Frequency

It refers to the percentage of an animal in the entire survey quadrats arise.

Biomass

It refers to the total weight per unit area of some (class) animals.

Dominant species dominant species it refers to the formation of community structure and community environments have significant control effect species. They are usually more than the number of those individuals, High biomass, larger, living the kind of ability.

4.1 Scientific Principles

Observation plots and observing the object should be representative, can fully reflect the observation area of freshwater benthic macroinvertebrates whole Body condition; should adopt a unified, standardized methods, observing the dynamic changes of freshwater benthic invertebrate diversity.

24.2 Operability principles

Observing programs should be considered owned by the human, financial and logistical support and other conditions, make full use of existing data and results, Li Foot existing observation equipment and personnel conditions, high efficiency, low cost methods of observation.

4.3 principles of sustainability, Observations should meet the needs of freshwater benthic invertebrate conservation and management, and biodiversity conservation and management Management work and play a guiding role in early warning. Observing objects, methods, time and frequency, once established, should remain fairly constant.

4.4 Principle of protection Avoid observations of wildlife damage, avoid frequent observation beyond the objective need. If you need to capture the focus of security Protecting species, should be given administrative permission of relevant authorities.

4.5 Security Principles Field observations have a certain degree of risk, the observer should receive professional training. Observation process should be done to secure Protective measures.

4.6 Applicability of the principle of According to observations freshwater bodies of shape, size, flow and other environmental conditions, and a variety of benthic macroinvertebrates raw Material science and ecological characteristics, select the appropriate methods of observation.

5 Methods of Observation

5.1 Observations ready 5.1.1 determine observation target Grasp the observation area benthic macroinvertebrates diversity and distribution, as well as human activities and environmental changes to their students Availability of influence; watershed for the development of ecological and environmental protection measures, evaluation of watershed ecological environment protection measures and policy implementation have Effectiveness to provide the basic data.

5.1.2 clear observation target Including hydrozoas and Hydromedusae (Cnidaria), vortex insects (Platyhelminthes), linear class (linear phylum), Nematodes (nematode phylum), Oligochaeta and leeches (Annelida), gastropods and bivalves (Mollusca), A Crustaceans, water, aquatic insects and spiders (arthropods door). In carrying out the observation of

species diversity, we should focus on the following categories group.

- a) national or regional endemic of dominant species or common species;
- b) the maintenance of freshwater ecosystem structure and processes of species system has an important role;
- c) has an important social and economic values of the species;
- d) changes in the aquatic environment sensitive species.

5.1.3 develop observation program Prepared morphology observation water view of the area, the type of substrate Figure 1. 10000 topographic map and other information, based on observation goals and outlook the target object, the development of scientific and rational observation programs.

5.1.4 observation team set up to carry out personnel training Organize observation force, clear the observer's responsibility to provide technical training for the observer, so the observer to grasp the field observation side Law, practices and species identification knowledge. At the same time, do full safety training, to prevent dangerous incidents.

5.1.5 Prepare observation equipment and instruments Prepare observing instruments, transport equipment and tools (see Appendix A). Checking and debugging tools and equipment, long-term Place the instrument accuracy correction to ensure that the facilities and running well.

5.2 observation sample set

35.2.1 Quantitative Observation

According lakes, reservoirs, rivers and other water bodies morphological characteristics, sediment type, hydrology, aquatic plants and large freshwater benthic Distribution Characteristics of invertebrates, and water pollution and other factors, to set off in a number of representative waters or thread-like surface, so that the degree of difference in the same section or sample line as small as possible. At regular intervals or sample located in the same section line Set a sample.

5.2.1.1 lakes and reservoirs the division of lakes and reservoirs into the entrance area, deep water area (or the lake district), the exit zone, coastal zones, or polluted and relative Different regions of the cleaning area, etc., to set up a number of representative cross section in these areas respectively. Depending on the direction of the cross section, each Some distance from the sample point setting, or the left and the middle section of the beach, and right sides are disposed a plurality of samples (Fig. 1). Break Surface samples and settings but also on the degree of interference waters make the appropriate adjustments based on the observation area of human economic activity.

5.2.1.2 river