Oceanography & Fisheries
Open access Journal
ISSN: 2476-0536

Juniper Publishers
key to the Researchers

Opinion
Volume 10 Issue 4 - October 2019
DOI: 10.19080/OFOAJ.2019.10.555795

Oceanogr Fish Open Access J

Influence of Zooplankton in Monitoring Water Quality

Liufu Wang, Wen Xue, YingYing Zhang, Hui Yang and Wenzhi Wei*

College of Animal Science and Technology, Yangzhou University, PR China

Submission: September 17, 2019; **Published:** October 01, 2019

Corresponding author: Wenzhi Wei, College of Animal Science and Technology, Yangzhou University, Yangzhou 225009, PR China

Abstract

This concise document reports on the urgency of water quality monitoring and the important indicative role of zooplankton in water bodies. Without a unified framework, we call on our peers to accelerate research and develop relevant zooplankton metrics to evaluate water quality.

Keywords: Influence; zooplankton; Monitoring water quality

Introduction

Eutrophication is a growing problem on the hydrological map of the world, attributable to urbanization and industrialization (point sources), and the extensive use of their waters for farming and cattle ranching (diffuse sources), which has compromised the quality of water [1]. The excessive enrichment of waters with anthropogenic sources of nutrients especially nitrogen (N) and phosphorus (P) lead to the transformation of oligotrophic water bodies to mesotrophic, eutrophic, and finally hypertrophic. Mesotrophic and eutrophic phases exhibit intermediate and rich levels of nutrients and show increasing and serious water quality problems, respectively [2]. Over the long term, eutrophication will lead to ecosystem destruction, thereby restricting water use for fisheries, recreation, industry, and drinking. For typical example, associated periodic surface blooms of cyanobacteria (blue-green algae) occur in drinking water supplies and may pose a serious health hazard to animals and humans. Thus, to monitor water quality changes and avoid disasters, the assessment of ecological status should be given priority in eutrophication study [3].

Zooplankton constitute a functional link between phytoplankton and bacterioplankton and higher trophic levels, such as fish and invertebrate larvae. Due to this important relationship with all taxonomic groups in aquatic environments, the population abundance of these organisms as well as biomass, diversity, and richness can be viewed as an interesting bio-indicator of the overall ecological condition of the whole waterbody [4-6]. By contrast, zooplankton have a strong indicator value, which cannot be covered by sampling fish and phytoplankton without a very comprehensive and costly effort. Thus, zooplankton can be a useful tool for the determination of ecological status to monitor water quality [7].

Conclusion

Although many ecologists have studied the relationship between trophic state and zooplankton community structure, there is no unified metrics for ecological evaluation of different water bodies [8-9]. Therefore, we call on our counterparts around the world to include zooplankton as a central biological quality element in the water framework directive assessments and undertake similar regional calibration exercises to obtain zooplankton metrics for monitoring water quality.

Acknowledgment

This article was funded by the Science and Technology Program of Gaoyou City (no.GY201816).

References

1. Smith VH (2003) Eutrophication of freshwater and coastal marine ecosystems a global problem. Environmental Science & Pollution Research International 10(2): 126-139.
2. Khan MN, Mohammad F (2013) Eutrophication: challenges and solutions. Eutrophication Causes Consequences & Control 1-15.
3. Wei W, Zhuang H, Zhang Y and Wang L (2019) Crustacean zooplankton community in relation to physicochemical factors and phytoplankton of 13 waterbodies located in the Yangtze River delta. Ann Limnol - Int J Lim 55: 16.
4. Landa GG, Barbosa FAR, Rietzler AC and Barbosa PM (2007) Thermocyclopsdecipiens (Kiefer, 1929) (Copepoda, Cyclopoida) as indicator of water qualityin the state of Minas Gerais, Brazil. Braz Arch Biol Technol 50(4): 695-705.

5. Santos-Wisniewsky MJ and Rocha O (2007) Spatial distribution and secondaryproduction of Copepoda in a tropical reservoir: Barra Bonita, SP, Brazil. Braz J Biol 67(2): 223-233.

6. Silva WM (2011) Potential use of Cyclopoida (Crustacea, Copepoda) as trophicstate indicators in tropical reservoirs. Oecologia Australis 15(3): 511-521.

7. Jeppesen E, Noges P, Davidson TA, Haberman J, Noges T, et al. (2011) Zooplankton as indicators in lakes: a scientific-based plea for including zooplankton in the ecological quality assessment of lakes according to the european water framework directive (wfd). Hydrobiologia 676(1): 279-297.

8. Stemberger GRS (1978) Zooplankton (especially crustaceans and rotifers) as indicators of water quality. Transactions of the American Microscopical Society 97(1): 16-35.

9. Ferdous Z and Muktadir AKM (2009) A review: potentiality of zooplankton as bioindicator. American Journal of Applied Sciences 6(10): 1815-1819.

DOI: 10.19080/OFOAJ.2019.10.555795

How to cite this article: Liufu Wang, Wen Xue, YingYing Zhang, Hui Yang, Wenzhi Wei. Influence of Zooplankton in Monitoring Water Quality. Oceanogr Fish Open Access J. 2019; 10(4): 555795. DOI: 10.19080/OFOAJ.2019.10.555795