



Seasonal pattern of cyanobacteria community and its relationship with environmental factors: a case study in Luoma Lake, East China

Ying Ren^{a,b}, Yuanshu Liu^c, Wenrong Hu^{a,b}, Daping Hao^d, Haiyan Pei^{a,b,*}, Chang Tian^{a,b}, Jielin Wei^{a,b}, Yawei Feng^{a,b}

^aSchool of Environmental Science and Engineering, Shandong University, Jinan 250061, China, Tel. +86 531 88399196; Fax: +86 531 88392983; emails: ry687@163.com (Y. Ren), wenrongh@sdu.edu.cn (W. Hu), haiyanhup@126.com (H. Pei), yztianchang@163.com (C. Tian), jielin0508@126.com (J. Wei), felicia183@126.com (Y. Feng)

^bShandong Provincial Engineering Center on Environmental Science and Technology, Jinan 250061, China

^cResearch Centre for Policy and Technology, Office of the South-to-North Water Diversion Project Commission of the State Council, Beijing 100000, China, Tel. +86 10 88659976; Fax: +86 10 88659972; email: liuyuanshu@mwr.gov.cn

^dHuaian Department of Hydrology and Water Resources Survey Office in Jiangsu Province, Huaian 223005, China, Tel./Fax: +86 517 83719512; email: dphao@163.com

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ABSTRACT

Luoma Lake is located on the east route of the South-to-North Water Diversion Project, and it is a potential source of drinking water. From March 2011 to May 2013, the spatio-temporal distribution variation of cyanobacteria community associated with environmental factors was comprehensively investigated based on a monthly sampling. A total of 27 cyanobacteria species belonging to 14 genera were identified, and the most predominant cyanobacteria genus was *Pseudanabaena*, not the usual bloom-forming genera such as *Microcystis* and *Anabaena*. The cyanobacteria abundance at all the sampling sites exhibited similar spatio-temporal distribution variation, and the cyanobacteria abundance ranged over seven orders of magnitude from the undetectable level to 3.9×10^7 cells/L. Redundancy analysis and Pearson correlation analysis were applied to analyze the relationship between species and environment variables. The results suggested there was a positive correlation between cyanobacteria abundance and water temperature and ammonium concentration, while that between cyanobacteria abundance and dissolved oxygen concentration was negative. In addition, other environmental factors like precipitation and water turbulence could affect the cyanobacteria community distribution. Cyanobacterial blooms might not occur in Luoma Lake, with the predominant cyanobacteria genus being *Pseudanabaena* and water quality improved owing to the implementation of the water diversion project.

Keywords: Cyanobacteria community; Seasonal pattern; Dominant species; Environmental factors; Water diversion project; Luoma Lake

*Corresponding author.