

Accepted Manuscript

Simultaneous removal of organic carbon and nitrogen pollutants in the Yangtze estuarine sediment: The role of heterotrophic nitrifiers

Qiang Jin, Jian Lu, Jun Wu, Yongming Luo

PII: S0272-7714(17)30412-2

DOI: [10.1016/j.ecss.2017.04.019](https://doi.org/10.1016/j.ecss.2017.04.019)

Reference: YECSS 5457

To appear in: *Estuarine, Coastal and Shelf Science*

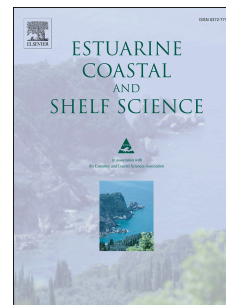
Received Date: 20 May 2016

Revised Date: 19 December 2016

Accepted Date: 16 April 2017

Please cite this article as: Jin, Q., Lu, J., Wu, J., Luo, Y., Simultaneous removal of organic carbon and nitrogen pollutants in the Yangtze estuarine sediment: The role of heterotrophic nitrifiers, *Estuarine, Coastal and Shelf Science* (2017), doi: 10.1016/j.ecss.2017.04.019.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Simultaneous removal of organic carbon and nitrogen pollutants in the Yangtze estuarine sediment: the role of heterotrophic nitrifiers

Qiang Jin¹, Jian Lu^{*2}, Jun Wu^{*3}, Yongming Luo²

¹ *School of Environmental Science and Engineering, Shanghai Jiao Tong University, Shanghai 200240, PR China*

² *Key Laboratory of Coastal Environmental Processes and Ecological Remediation, Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences, Yantai, Shandong 264003, PR China*

³ *Qinghai Institute of Salt Lakes, Chinese Academy of Sciences, Xining, Qinghai 810008, PR China*

* Corresponding author: Phone: 86-535-2109278; Email: jlu@yic.ac.cn

Abstract

The Yangtze Estuary is one of the most eutrophic coastal areas in the world. The engagement of heterotrophic nitrification bacteria in the simultaneous removal of organic carbon and ammonium in the Yangtze estuarine sediment was investigated. The specific nitrification rate in the selective autotrophic nitrification inhibition treatment was about 25% of that in the control without autotrophic nitrification inhibition, suggesting that heterotrophic nitrification, in addition to autotrophic nitrification, was an important nitrification process in the sediment. The increase of heterotrophic nitrification can offset the decrease in autotrophic nitrification, which subsequently leads to the high tolerance of nitrification to the organic carbon. The number of heterotrophic nitrification bacteria was 7.1×10^7 MPN g⁻¹ in sediment collected from Site 1 while that of autotrophic nitrification bacteria was 4.2×10^8 MPN g⁻¹. The isolation of heterotrophic nitrification bacteria provides direct evidence of the engagement of heterotrophs in the nitrification of the Yangtze estuarine sediment. The results show that nitrification is catalyzed by both the autotrophs and

Download English Version:

<https://daneshyari.com/en/article/5765334>

Download Persian Version:

<https://daneshyari.com/article/5765334>

[Daneshyari.com](https://daneshyari.com)