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Water quality in relation to phytoplankton abundance and density of mining-impacted river in Zambales, Central Luzon, PhilippinesRowena R Sazon¹ and Veronica P Migo²¹Ramon Magsaysay Technological University, Philippines²UPLB, Philippines

The Philippines ranked fifth in terms of mineral resources with Zambales as one of the declared reservation sites. Open pit mining method employed in nickel extraction within the watershed resulted to removal of vegetation triggering soil erosion, runoff and sedimentation. After years of operation, environmental issues related to water and soil quality arose due to continuous silt deposition in water bodies and flood plains. The aim of the study is to assess the water quality and plankton community structure of a river impacted by mining operations in Zambales to aid the decision makers in the formulation of rehabilitation measures and strategies for restoration and sound utilization of its water resources. Seasonal changes in water quality were evaluated at four sampling stations in terms of physico-chemical characteristics which include temperature, pH, dissolved oxygen, electrical conductivity, salinity, total dissolved solids, Secchi disk visibility, chemical oxygen demand, nitrate-N and phosphate. Phytoplankton were identified up to the lowest possible level and their density and abundance were correlated with water quality parameters. DO, total dissolved solids and COD exceeded the Department of Environment and Natural Resources limit for Class C water. Nitrate and phosphate content indicates oligotrophic status of the river except after flooding brought about by typhoon Koppu where phosphate exceeded the limit of 0.2 mg/L. About 38 taxa of phytoplankton belonging to five taxonomic groups were identified and the predominant species are those that thrive in oligotrophic condition and high organic pollution. Correlation existed in some water quality parameters and phytoplankton density and abundance. The river is no longer in healthy state as indicated by its high COD and low DO suggesting an urgent need for river rehabilitation so as to abate their negative consequences not only to aquatic life but also to the livelihood sources of the fishery and farming sectors.

Biography

Rowena R Sazon has completed her graduation (Bachelor of Science) in Biology (Microbiology) from the University of the Philippines Los Baños in 1990. She finished her Master of Environment and Natural Resources Management from the UP Open University in 2004. In 2009, she graduated with Great Distinction from the Faculty of Bioscience Engineering at Ghent University (Universiteit Gent), Belgium for her second Master's degree, MS Environmental Sanitation (Water). Her research focused on *ex-situ* bioremediation of oil-polluted clay soils. Her research interests include phytoremediation and water and sediment quality evaluation. She finished PhD in Environmental Science at the School of Environmental Science and Management in UPLB under the DOST-ASTHRDP Scholarship Grant where she worked on the assessment of the environmental impacts of mining operations in the riverine ecosystem. She is currently serving as Associate Professor III at the Department of Biology, College of Arts and Sciences, Ramon Magsaysay Technological University (RMTU) in Zambales, Philippines.

rrsazon1@up.edu.ph, rsazon@yahoo.com

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