

Stream Benthic Macroinvertebrates Response to Water Quality of Urban and Rural Areas of the Marikina Watershed

*Alezz Kryzzien Villanueva Tan¹, Alexis Elegino Belen¹, Cristine Perez¹, Gelsie Rose Buenaventura¹, Elfritzson Martin Peralta², Irisse Bianca Baldovino De Jesus^{3,2}, Paul Palomares⁴, Jonathan Carlo Briones^{1,2,3}, Tohru Ikeya⁵, Francis Magbanua⁴, Rey Donne Papa^{1,2,3}, Noboru Okuda⁵

1. University of Santo Tomas, Department of Biological Sciences College of Science, 2. Research Center for Natural and Applied Sciences, 3. The Graduate School, University of Santo Tomas, Espana Boulevard, Metro Manila, Philippines, 4. Institute of Biology, University of the Philippines Dileman, Quezon City, Philippines, 5. Research Institute for Humanity and Nature, Kitu-ku, Motoyama, Kyoto, Japan

The Marikina Watershed is located at the north-eastern part of the province of Rizal and is comprised of five municipalities: Antipolo, Baras, Rodriguez, San Mateo, and Tanay. But due to the rise of population and urbanization of the country, some of the areas of the Marikina Watershed were affected and the water quality has drastically changed. This study aims to evaluate the response of benthic macroinvertebrates to streams with different physicochemical conditions along the Marikina Watershed and to identify these benthic macroinvertebrates down to the lowest possible taxa. Sixteen sites were chosen for this study with sites U1-U8 near urban communities and sites R1-R8 near rural communities. The physicochemical parameters were tested on-site and benthic macroinvertebrates were sampled using a Surber Sampler. It was found that species from orders Ephemeroptera, Plecoptera, Trichoptera, and Coleoptera were more abundant in sites R1-R8 than sites U1-U8. Dipterans, such as chironomids and simuliids were more abundant in sites U1-U8 than sites R1-R8. This is due to the pollution tolerance of the benthic macroinvertebrates; dipterans are more resistant to pollution meaning that species under Ephemeroptera, Plecoptera, Trichoptera, and Coleoptera are good bioindicators for pollution. It was found that the increase in urban communities negatively influenced the benthic macroinvertebrate community and therefore poses a serious threat to the biodiversity of the organisms found in the inland water areas of the country.

Keywords: bioindicators, benthic macroinvertebrates, urbanization