Microbiological Assessment and Detection of Potentially Pathogenic Bacteria on Three Areas along the Iloilo River

An Undergraduate Research Paper Presented to the

Division of Biological Sciences

College of Arts and Sciences

University of the Philippines Visayas

Miag-ao, Iloilo

In Partial Fulfilment of the Requirements in Bio 199:

Research in Biology

By

John Carlo P. Caballo

BS Biology 4

April 2011

ABSTRACT

The Iloilo River, which traverses the whole length of Iloilo City, serves as a water source for different human activities hence, subjecting it to a variety of pollutants. Microbial and physico-chemical parameters of the three areas along the Iloilo River (Carpenter's Bridge, IBRD Bridge, and Dungon Creek) were assessed to in order to provide a quantifiable evaluation of the river's water quality. The presence of *Salmonella spp.*, *Eschericia coli*, *Streptococcus spp.* and *Vibrio spp.*, was also determined. HPC counts indicate very-high to extremely-high levels of bacterial loading (5.31×10^5-1.60×10^6 CFU/100mL) among the three sampling areas. Total coliform levels indicated contamination of the river from outside sources, potentially from domestic sewage discharges and run-offs from nearby establishments. The FC: FS ratio suggests contamination mostly came from mixed origins, with the noted exception of Carpenter's Bridge, which is dominated by human fecal contamination. Minimal variations in physico-chemical parameters were observed for all areas. Significant correlations were found among salinity ($p=0.002$) and temperature ($p=0.042$) with TC; between FS with dissolved oxygen ($p=0.00$), and between FC and temperature ($p=0.005$). Contamination of the river by organic and fecal matter from animal and human sources provided a suitable habitat for pathogenic bacteria. A considerable quantity of potentially pathogenic bacteria such as; *E.coli*, *Salmonella spp.*, *Streptococcus spp.* and *Vibrio spp.*, were isolated from each sampling area. Exposure to these pathogens in drinking and recreational waters poses health risks to local inhabitants and to any individual who would consume water from the river.