

Orn-uma Supasri 2010: Diversity of Aquatic Insects and Water Quality of Mae Klong Watershed. Master of Science (Environmental Science and Technology), Major Field: Environmental Science and Technology, Division of Science. Thesis Advisor: Ms. Taeng-On Prommi, Ph.D. 199 pages.

The diversity of aquatic insects and water quality in Mae Klong Watershed were evaluated and monitored. Seven reference sites in upstream and five impacted sites at the downstream were selected along the river for this study during February 2009 to May 2010. A total of 14,021 individual aquatic insects belonging to 9 orders and 61 families were collected. The order Hemiptera was the most in number of family (13 family), followed by Ephemeroptera and Odonata (11 family), Trichoptera and Diptera (10 family), Coleoptera (8 family), Plecoptera (3 family), Lepidoptera and Megaloptera (1 family). A total of 9,366 adult male caddisflies, representing 13 families, 33 genera and 98 species. The family Leptoceridae had the highest species diversity (42 species), followed by Hydropsychidae (20 species), Ecnomidae (8 species), Psychomyiidae (7 species), Philopotamidae and Goeridae (3 species), Dipseudopsidae and Polycentropodidae (4 species), Hydroptilidae and Calamoceratidae (2 species), Rhyacophilidae, Helicopsychidae and Odontoceridae (1 species). The diversity of aquatic insects in the upstream of the MaeKlong Waterdshed was higher than the downstream. Almost all of water quality parameter values were in class 2 and 3 of the Classification and Standards of Water of Thailand. The correlation between the biodiversity of aquatic insects and water quality parameters were analyzed. *Macrostemum midas*, *Ecnomus volovicus*, *E. puro*, *Hydropsyche camillus*, *Aethaloptera sexpunctata*, *Ugandatrichia hongia*, *Chimarra akkaorum*, *C. chiangmaiensis*, *Amphipsyche gratiosa*, *Cheumatopsyche dubitans*, *Setodes argentiguttatus*, *Marilia sumatrana*, Aphelocheiridae, Veliidae, Hebridae, Nemouridae, Nepidae, Helotrephidae, Pleidae, Heptageniidae, Leptophlebiidae, Perlidae, Hydrophilidae, Psephenidae, Chlorocyphidae, Protoneuridae, Gomphidae, Libellulidae, Euphaeidae, Corduliidae, Platycnemididae, Coenagrionidae, Aphelocheiridae, Scirtidae, Calopterygidae, Notoncetidae Simuliidae, Aeshnidae, Corixidae were significantly correlated with water and air temperature, pH, dissolved oxygen (DO), conductivity, total dissolved solids (TDS), alkalinity, turbidity, ammonia nitrogen (NH<sub>4</sub>-N), nitrate nitrogen (NO<sub>3</sub>-N), orthrophosphate (PO<sub>4</sub><sup>3-</sup>), and sulfate (SO<sub>4</sub><sup>2-</sup>) ( $p < 0.05$ ,  $p < 0.01$ ).

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Thesis Advisor's signature