

Thesis Title Relationship of Nutrients to the Distribution of
Phytoplankton and Primary Production in
Reservoir of Huay Hong Krai Royal Development
Study Center

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Abstract

This study was carried out to investigate the relationship of phytoplankton dispersal to nutrients and primary production in 3 reservoirs at the Huay Hong Krai Royal Development Study Center. Reservoir A is surrounded by natural forest. Reservoir B is surrounded by natural forest, areas of reforestation and a small open zoo. This reservoir is used for culturing fishes in cages. Reservoir C, the

biggest one, is surrounded by natural forest and animal farms. This reservoir is used as a natural fishery. The study was conducted for 12 months from October 1991 to September 1992.

The surveys of phytoplankton in the 3 reservoirs showed that reservoir C had the highest quantities in term of both numbers of organisms and taxa. Reservoir A had the next highest number of organisms, while reservoir B had the next highest number of taxa. The predominant species in all 3 reservoirs were Cylindrospermopsis philipinensis and C. raciboskii which are in the Division Cyanophyta. The phytoplankters found in this study were identified to be in 5 Divisions, 13 Orders, 23 Families, 46 Genera and 149 Species. Most phytoplankters were in the Division Chlorophyta, Order Chlorococcales, while Division Chrysophyta, Order Pennales came second and Division Euglenophyta, Order Euglenales was third in abundance.

The phytoplankton populations were related not only to the quantity of nutrients but also to the temperature. There was to less phytoplankton in the cold season but there was more at the end of the hot season and in the rainy season. The quantities of total phosphorous, orthophosphate and chlorophyll-a in reservoir C were high during May, which resulted in a high concentration of phytoplankton in this reservoir. When the pH of the water in the reservoirs was on the alkaline side, the concentration of phytoplankton was high. In addition, high concentrations of nitrate-nitrogen resulted in high concentrations of phytoplankton. The relationship between

concentration of nutrients and the number of species of phytoplankton was not clear. It can be concluded that the water quality of reservoirs A and B is good, with low levels of nutrients and these can be classified as oligotrophic reservoirs. The water in these 2 reservoirs can be treated for potable and domestic uses easily. The water in reservoir B can be used for livestock raising without any treatment. Reservoir C can be classified as a mesotrophic reservoir and thus is suitable for rearing fishes.