



CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

Lakes are important features in Malaysia due to their economic value as recreational centres and for tourism. Many of the ex-mining pools have been converted into valuable recreational hubs and attractive parks such as Desa Water Park in Kuala Lumpur, The Mines Resort City in Selangor and Bukit Merah Water World in Perak.

Putrajaya Lake is one of the most well planned lakes in Malaysia. It is located within the Federal Territory of Putrajaya which is about 26 km, south of Kuala Lumpur (Figure 1). It is designed to cater for multifunctional uses, including recreation, fishing, water transport, whilst maintaining high standards of water quality and aesthetics. A self-sustaining and balanced lake ecosystem is crucial to both the functioning and philosophy of the development of Putrajaya as a "Garden City" (Putrajaya Holdings, 1996). However, this man-made lake water quality is subjected to the pollutants from the construction activities which are carried out at the catchment area of the lake. In view of this, the Putrajaya Lake Management Guide and the Putrajaya Environmental Management Guide were published to ensure that development of the surrounding areas does not cause major pollution to the lake. The Putrajaya Lake Management Guide assists the Authority to monitor the lake water quality using criteria such as the Carlson Trophic State Index (Putrajaya Corporation, 1998a and 1998b). However, Jorgensen and Vollenweider (1989) expressed that this index is not practical because other factors such as grazing pressure of zooplankton, were not take into consideration.

Algae are an ecological important group in most aquatic ecosystems but are often ignored as indicators of aquatic ecosystem changes (McCormick and Cairns, 1994). The use of algal indicators of ecosystem condition has historically focused on effects associated with organic enrichment and eutrophication (Patrick, 1994). But algae for

biological monitoring is one of the most important and widely used in freshwater ecosystems (Whitton *et al.*, 1991).

A portion of the completed Putrajaya Lake known as Lower Bisa Area was chosen for this study. The aim of this study is to assess the use of phytoplankton as biological indicator for the lake water quality which could be used for future water monitoring programme. This study assessed the state of several physico-chemical water quality parameters, abundance, composition and diversity of phytoplankton in the initial stage when the construction and earthworks at the surrounding areas were still ongoing and thus the lake is now expected to be different. Multivariate statistical techniques were used to analyse the significance of interactions amongst the variables. This study will provide baseline data that can be used for future reference and assessment if there are any changes to the present state. A checklist of the lake phytoplankton will be compiled for assessing the water quality status of the lake.

1.1 Objectives

To assess the water quality in the Lower Bisa Area of Putrajaya Lake in relation to the phytoplankton community. This is done by:-

- (i) determining the phytoplankton species composition, diversity and relative abundance. This provides the baseline data of the phytoplankton for future reference;
- (ii) determining selected water quality parameters. The determination of water quality parameters are important to identify the possibly sources of pollutants in the area;
- (iii) correlating the phytoplankton data with water quality data; and
- (iv) determining possible indicator species for future water quality monitoring programmes.

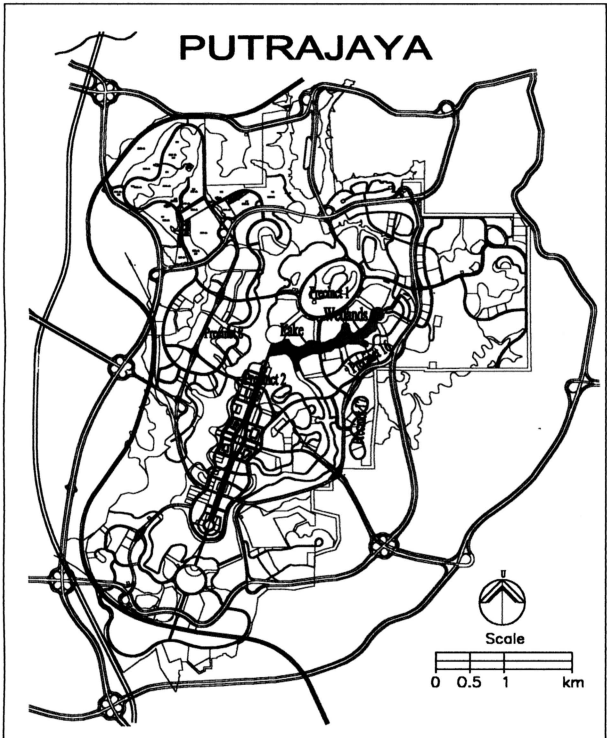


Figure 1. Location of study area within the Federal Territory of Putrajaya