

UNIVERSITI TEKNOLOGI MARA

**THE DISTRIBUTION AND
ABUNDANCE OF FRESHWATER
FISHES OF THE KENIYAM RIVER,
TAMAN NEGARA PAHANG**

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ABSTRACT

This study was conducted at the Keniyam River, Taman Negara Pahang, Malaysia. The aim of the study was to determine and quantify the fish species richness, diversity, and community structure of the Keniyam River. Fish sampling was conducted from March 2011 to June 2012 utilising gill nets, traps, cast net, and hook and line. A total of 34 fish species from 11 families were recorded. The Cyprinidae was the most represented with 20 species while the abundant fish was *Mystacoelucus obtusirostris*. Canonical Correspondence Analysis showed that river features (water speed, water depth and riverbed structure) and water chemical parameters (dissolved oxygen and pH) were the main factors affecting fish distribution and abundance. Water turbulence of the rapids increased DO levels which contributed to the higher fish diversity ($H' = 2.65$) at the upper reaches. The abundance of sub-adult and adult fishes, and higher fish biomass (mean = 266.52 ± 580 g/hr) suggested the rapids as fish growth areas. Larger game fishes like *Tor tambroides*, *Hampala macrolepidota*, and *Hemibagrus gracilis* were recorded from the rapids. Fish species richness ($D'' = 4.67$) and fish density (mean = 0.401 ± 0.3 no/hr) were higher from the deeper water bodies of the middle reaches. The pools were dominated by juvenile fish and also recorded higher abundance of female fish, signifying its importance as nursery grounds. Fish diet was mainly plant material and detritus. The length-weight relationship for the 10 most abundant fish showed negative allometric growth while their condition factor, k varied from the different sampling zones. The lack of proper guidelines for the recreational fishing activity may in future affect game fish populations and requires further studies to formulate fish conservation management strategies to sustain the fish biodiversity of the Keniyam River.

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CHAPTER ONE

INTRODUCTION

1.1 RESEARCH BACKGROUND

1.1.1 Freshwater Fish Diversity

The Asian climate varies from the most dry to most rainy, which is suitable for all kinds of aquatic ecosystems [from temporary seasonal ponds to large lakes, ephemeral streams to large rivers and wetlands (bogs and mangroves)] to occur in different parts of Asia (Gopal, 2005). Hence, it is natural that the Asian inland aquatic ecosystems are highly rich with plant and animal diversity (Dudgeon, 2000a; Gopal, 2005). It is estimated that 40% of the known fish species (10,000 out of 25,000) live in freshwater (World Wildlife Fund [WWF], 2004). Freshwater fish communities are high in species richness and diversity in Asia's tropical riverine systems (Kottelat, Whitten, Kartikasari, & Wirjoatmodjo, 1993). The total number of fish families in Asia amount to 105, as compared to 74 families in Africa and 60 families in South America (Dudgeon, 2000b).

The largest river in Southeast Asia, the Mekong, which flows through six countries (China, Myanmar, Laos, Thailand, Cambodia and Vietnam) is estimated to have 1200 species (Poulsen & Valbo-Jorgensen, 2000). There are approximately 930 fish species from the riverine systems of Indochina; 289 species from the Kapuas River, Kalimantan; 262 species from the Pearl River, China; 150 species from the Salween River, Burma; and 147 species from the Mahakam River, Borneo (Kottelat, 1989; Roberts, 1989; Dudgeon, 2000a).

Malaysia is one of the 12 mega-diverse countries with heterogeneous inland water bodies and wetlands and it is estimated that the total surface area of inland water bodies and freshwater wetlands (rivers, peat swamps, reservoirs, mining pools, and paddy fields) is approximately 45,459 km² (Yusoff & Gopinath, 1995). There are over 1,500 rivers but 94 are identified as major rivers (Anon, 1998; Yap, 1992). There is thus a variety of freshwater habitats and a large expanse of water body which provides adequate opportunity for fish proliferation. Fish species richness in the riverine system of Malaysia amounts to 449 species (Ministry of Science, Technology, and Environment [MOSTE], 2007). Past works on inland fishes of Peninsular Malaysia by