



UNIVERSITI PUTRA MALAYSIA

***EFFECT OF CLAY TURBIDITY ON THE GROWTH AND SURVIVAL
OF KERAI LAMPAM
Hypsibarbus wetmorei x Barbonymus gonionotus***

ADIBA AKMAL BINTI LOKMAN

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**This project report is submitted in partial fulfillment of the requirements for
the degree of Bachelor of Agriculture (Aquaculture)**

**DEPARTMENT OF AQUACULTURE
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2013

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This is to certify that I have examine the final project report and all corrections have been made as recommended by the panel of examiners. This report complies with the recommended format stipulated in the AKU 4999 project guidelines, Department of Aquaculture, Faculty of Agriculture, Universiti Putra Malaysia

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ABSTRAK

Kesan kekeruhan tanah liat ke atas prestasi pertumbuhan dan kadar hidup ikan kerai lampan telah dikaji dalam tempoh 5 minggu. Eksperimen telah dijalankan di pusat penyelidikan akuakultur Puchong, Universiti Putra Malaysia. Terdapat empat jenis rawatan, setiap satunya dengan empat replikasi: 0ppm (rawatan 1), 50ppm (rawatan 2), 150ppm (rawatan 3), dan 300ppm (rawatan 4). Setiap akuarium telah di stok dengan 20 individu kerai lampan (saiz 2-3 inci) dan dipenuhi dengan 60 L air. Ikan telah diberi makan pelet tiruan sebanyak 5% daripada berat badan sebanyak dua kali sehari. Data telah dianalisis dengan menggunakan SPSS, julat berganda Duncan, dan ANOVA ($P = 0.05$) sehalu. Semasa eksperimen, kualiti air telah diukur. Oksigen terlarut (DO) dikekalkan di atas 4mg / L, manakala julat pH adalah dari 6.78 sehingga 8.57 dan julat suhu adalah dari 24.78 ° C sehingga 27.40 ° C. Ammonia - Nitrogen telah dikekalkan di bawah 2.00 mg/L. Tahap kekeruhan tanah liat sehingga 300ppm tidak menjejaskan pertumbuhan dan kadar hidup kerai lampan. Bagaimanapun, ia memberi kesan kepada variasi saiz. Rawatan dengan 150ppm kekeruhan tanah liat cenderung mempunyai saiz ikan lebih besar ($> 2g$) berbanding dengan rawatan selainnya.

ABSTRACT

Effect of clay turbidity on the growth performance and survival of kerai lampam was investigated during a 5-week experimental period. The experiment was conducted at the Aquaculture Research Centre, Puchong, Universiti Putra Malaysia. There were four turbidity treatments, each with four replicates: 0ppm (treatment 1), 50ppm (treatment 2), 150ppm (treatment 3), and 300ppm (treatment 4). Each aquarium was stocked with 20 individuals of kerai lampam (2-3 inches size) and filled with 60 L of water. Fish were fed by artificial pellets at 5% of body weight twice a day. The data was analysed by using SPSS, Duncan's multiple range test, and one-way ANOVA ($P=0.05$). During the experiment, water quality was measured. Dissolved Oxygen (DO) was maintained above 4mg/L, whereas pH range was from 6.78 until 8.57 and temperature range was from 24.78°C until 27.40°C. Ammonia-Nitrogen was maintained below 2.00 mg/L. Different levels of clay turbidity did not affect the growth and survival of kerai lampam, but influenced size variation. Treatment with 150ppm of clay turbidity tended to have bigger size fish (>2g) compared to the other treatments.

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LIST OF ABBREVIATIONS

UPM	Universiti Putra Malaysia
FCR	Feed Conversion Ratio
SGR	Specific Growth Rate
DWG	Daily weight gain
ANOVA	Analysis of variance
NTU	Nephelometric Turbidity Unit
DO	Dissolved Oxygen
L	Litre
R	Replicates
mg/L	Miligram per litre
g	Gram
TAN	Total Ammonia Nitrogen
%	Percentage
°C	Celsius
ppm	Parts per million

CHAPTER 1

INTRODUCTION

1.1 Background of study

Anonymous (2012) stated that kerai lampam is a hybrid species between male of *Hypsibarbus wetmorei* with female of *Barbonymus gonionotus*. To date, not many studies on kerai lampam have been done. According to the Fisheries Department of Malaysia, kerai lampam is a favourable hybrid species to cultured. Kerai lampam also has an attractive body coloration and high growth performance (Anon, 2012).

Hypsibarbus wetmorei is also known as Lemon Fin Barb, Diamond Shark or Golden Belly Barb. It occurs at mid water to bottom depths of medium-sized streams in forests. It is not known to migrate, but may move upstream during periods of high water levels. It does not inhabit impoundments. *Hypsibarbus wetmorei* is widely distributed in Maeklong, Mekong and Chao Phraya basins and also in the Malay Peninsula, (Rainboth, 1996).

On the other hand, *Barbonymus gonionotus* lives at mid water to bottom depths in rivers, floodplains, streams and reservoirs. It seems to prefer standing water habitats instead of flowing waters and inhabits flooded forest during high water period (Rainboth, 1996). *Barbonymus gonionotus* is widely distributed in

Asia such as Mekong and Chao Phraya basins, Malay Peninsula, Sumatra and Java (Kottelat, 1998). *Barbonymus gonionotus* also feeds on plant matter like leaves, weeds, *Ipomea reptans* and *Hydrilla* and invertebrates (Mohsin and Ambak 1983).

Clay turbidity has become one of the problems in fertilization management of freshwater ponds. Lin *et al.* (1997) stated that clay turbidity in pond water originates mainly from a number of sources: turbid source water, rainwater runoff from pond dikes that contain dispersed clay, especially where the dike surfaces are wide and barren, erosion of pond edges caused by sloshing water movement and fish grazing, and resuspension of bottom mud by water and fish movements. High clay turbidity usually will cause low nutrient level, acidity and limited light penetration for photosynthesis (Boyd, 1990). Besides, it will result in reduction of primary production (Diana *et al.*, 1991).

1.2 Objectives

The objectives of this study were to investigate:

1. The effect of clay turbidity on the growth and survival of hybrid kerai lampam (*Hypsibarbus wetmorei* x *Barbonymus gonionotus*).
2. Water quality parameters associated with the clay turbidity treatments.

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