



UNIVERSITI PUTRA MALAYSIA

**DIVERSITY AND FEEDING GUILDS OF FISH POPULATIONS IN
PENGKALAN GAWI – PULAU DULA SECTION OF
TASIK KENYIR TERENGGANU, MALAYSIA**

IZHARUDDIN SHAH BIN KAMARUDDIN

FP 2011 30

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By

IZHARUDDIN SHAH BIN KAMARUDDIN

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of the Requirements for the Degree of Master of Science**

April 2011

DEDICATION

I dedicated this thesis to my wife Wan Ainal Yaqin Wan Zulkifli, my son Afif Hasif Izharuddin Shah, to my beloved parents Mak Abah Klang, Mama Papa Kuantan, and to my brothers and sisters.



Abstract of thesis presented to Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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Chairman : Mustafa Kamal Abdul Satar, PhD

Faculty : Agriculture

This study was conducted to evaluate the species diversity and feeding habits of fish population in the Pengkalan Gawi – Pulau Dula section of Tasik Kenyir Terengganu. Samples were collected monthly from February 2008 to January 2009 (12 months) at three sampling stations designated as Station A (Pulau Dula), Station B (Sungai Ikan) and Station C (Pulau Pupi). Fish sample were collected using gill nets measures 100 m long, 3 m deep and having a stretch mesh size of 6.35 cm (2.5 inches). A total of 274 individuals fish comprising 13 species from 5 families were collected during the study period. The mean values for the Shannon-Weaver index, Pielou Evenness index and Margalef Richness index were 1.41 ± 0.23 , 0.81 ± 0.13 , 3.53 ± 0.62 respectively.

Six most dominant species namely *Barbodes schwanenfeldii*, *Notopterus* sp., *Hampala macrolepidota*, *Hemibagrus nemurus*, *Channa micropeltes* and *Pristolepis faciatus*

were selected for the study on the stomach contents. Among the wide and variety prey consumed, Aquatic insect was the most important food item fed by the fish species in this ecosystem. The Aquatic insect food item was abundant in the stomach of *H. nemurus* thus it was categorized as insectivore fish species. Four other species comprising *B. schwanenfeldii*, *Notopterus* sp., *H. macrolepidota* and *P. faciatus* consumed on balance dietary component mostly Aquatic insect, Fish food item, Plant materials and Phytoplankton. The stomach content of *C. micropeltes* was found with high percentage of Fish food item and it was classified as piscivore fish species with the highest Trophic Level value of 3.56 ± 0.63 .

In terms of spatial distribution, Shannon-Weaver index value in Pulau Dula was the lowest when compared to the other stations. This station was inhabited by 9 species with 72 individuals fish, while Sungai Ikan was inhabited by 11 species with 128 individuals and Pulau Pupi was inhabited by 7 species with 74 individuals fish. All of the six most dominant species were present at each station and most of them were found in abundance specifically in one station, indicated that they were limited to one particular habitat. Temporally, the three most dominant species included *B. schwanenfeldii*, *Notopterus* sp. and *H. macrolepidota* were present in the monthly samples throughout the study period.

The results of this study indicated that most of the species found were similarly reported in other studies in Tasik Kenyir. It is hoped that the results will be useful in contributing towards management of the lake in a sustainable manner for future generations.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**KEPELBAGAIAN DAN TABIAT PEMAKANAN BAGI POPULASI IKAN DI
SEKSEN PENGKALAN GAWI – PULAU DULA DI TASIK KENYIR
TERENGGANU, MALAYSIA**

Oleh

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Kajian ini dijalankan untuk menilai kepelbagaian spesis dan tabiat pemakanan bagi populasi ikan di Seksen Pengkalan Gawi – Pulau Dula di Tasik Kenyir, Terengganu. Sampel ikan dikumpul pada setiap bulan bermula dari bulan Februari 2008 sehingga Januari 2009 (12 bulan) di tiga stesen penyampelan yang dinamakan sebagai Stesen A (Pulau Dula), Stesen B (Sungai Ikan) dan Stesen C (Pulau Pupi). Sampel ikan ini dikumpul dengan menggunakan pukot insang berukuran 100 m panjang, 3 m labuh dan saiz mata pukot berukuran 6.35 cm (2.5 inci). Sebanyak 274 individu ikan merangkumi 13 spesies dari 5 famili telah dikumpulkan sepanjang kajian ini dijalankan. Nilai min bagi indeks Shannon-Weaver, indeks Pielou Evenness dan indeks Margalef Richness adalah masing-masing dengan nilai 1.41 ± 0.23 , 0.81 ± 0.13 dan 3.53 ± 0.62 .

Enam spesies paling dominan seperti *Barbodes schwanenfeldii*, *Notopterus* sp., *Hampala macrolepidota*, *Hemibagrus nemurus*, *Channa micropeltes* dan *Pristolepis faciatus* dipilih bagi mangkaji kandungan isi perut ikan. Diantara pelbagai jenis mangsa yang dimakan, Serangga akuatik merupakan jenis makanan yang paling penting yang dimakan oleh ikan di dalam ekosistem ini. Makanan Serangga akuatik mempunyai kelimpahan tertinggi di dalam kandungan isi perut *H. nemurus* justeru ia dikategorikan sebagai spesies ikan insektivora. Empat spesies lain merangkumi *B. schwanenfeldii*, *Notopterus* sp., *H. macrolepidota* dan *P. faciatus* mengambil komponen pemakanan yang seimbang dimana kebanyakannya adalah terdiri daripada Serangga akuatik, Makanan jenis ikan, Kandungan bahan tumbuhan dan Fitoplankton. Kandungan isi perut *C. micropeltes* pula didapati mempunyai peratusan tertinggi bagi Makanan jenis ikan dan ianya dikelaskan sebagai spesies ikan pisivora dengan nilai Trophic Level tertinggi iaitu 3.56 ± 0.63 .

Dari segi taburan mengikut ruang, nilai indeks Shannon-Weaver di Pulau Dula merupakan yang terendah apabila dibandingkan dengan stesen-stesen yang lain. Stesen ini didiami oleh 9 spesies dengan 72 individu, manakala Sungai Ikan didiami oleh 11 spesies dengan 128 individu dan Pulau Pupi didiami oleh 7 spesies dengan 74 individu ikan. Kesemua enam spesies ikan dominan hadir di setiap stesen dan kebanyakan mereka ditemui tertumpu hanya di satu stesen dengan kelimpahan yang tinggi, ini menggambarkan bahawa mereka adalah terhad di dalam satu habitat tertentu sahaja.

Dari segi masa pula, tiga spesies paling dominan termasuk *B. schwanenfeldii*, *Notopterus*

sp. dan *H. macrolepidota* hadir di dalam sampel bulanan sepanjang tempoh kajian dijalankan.

Keputusan kajian ini menunjukkan bahawa kebanyakan spesis yang ditemui turut juga dilaporkan didalam kajian lain di Tasik Kenyir. Diharap, agar keputusan ini berguna dalam menyumbang kepada pengurusan yang mampan di Tasik Kenyir untuk generasi yang akan datang.



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I certify that a Thesis Examination Committee has met on 19 April 2011 to conduct the final examination of Izharuddin Shah Bin Kamaruddin on his thesis entitled “Diversity and Feeding Guilds of Fish Populations in Pengkalan Gawi – Pulau Dula Section of Tasik Kenyir Terengganu” in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science. Members of the Thesis Examination Committee were as follows:

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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.



IZHARUDDIN SHAH BIN KAMARUDDIN

Date: 19 April 2011

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