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A STUDY OF MONOGENEAN GILL PARASITE ON CAGE-CULTURED RED TILAPIA (*Oreochromis* sp.) IN RELATION TO WATER PHYSICO-CHEMICAL PARAMETERS IN COMO RIVER KENYIR LAKE

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Thesis Submitted in Fulfillment of the Requirement for the Degree of Master of Science in the Institute of Tropical Aquaculture Universiti Malaysia Terengganu

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A special dedication to my supervisor, Prof. Emeritus Dr. Faizah Mohd Sharoum, co-supervisors, beloved friends and family, Hj. Mohd Agos Daud & Hjh. Zaidah Ismail

Abstract of thesis presented to the Senate of Universiti Malaysia Terengganu
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The aquaculture sector has been an important vector for the introduction, transfer and spread of aquatic diseases and parasites. A high impact cage culture project for farming economically important freshwater fishes was launched at Como River, by the Department of Fisheries, Malaysia where heavy mortality and slow growth of fishes was reported. A study on red tilapia (*Oreochromis* sp.), cultured at Kenyir Lake was conducted using water quality profiles, spatial distribution, monthly prevalence and mean intensity of monogenean infection in relation to water physico-chemical parameters of the lake. Monogeneans are of great interest to the ecologist because of their simple life cycle and are considered as one of the important and sensitive parasites to any changes in water quality. A total of 121 of *Oreochromis* sp. from different size classes were collected from Como River, Kenyir Lake. They were randomly sampled from different cages for a period of 13 months from April 2011 to April 2012. Water quality parameters including water surface temperature,

dissolved oxygen and pH which were measured using a YSI Multi Probe System (Model 556MPS), while nutrient analyses involved ammonia, nitrite, nitrate and phosphate were analyzed by using the Hach Kit (Drell, 2800). Examination of gill parasites from *Oreochromis* sp. at Kenyir Lake (Terengganu, Malaysia) revealed the presence of six different species of monogenean, five members from genus *Cichlidogyrus* Paperna, 1960 (*Cichlidogyrus halli* Price & Kirk, 1967, *Cichlidogyrus mbirizei*, *Cichlidogyrus thurstonae* Ergens, 1981, *Cichlidogyrus sclerosus* Paperna & Thurston, 1969, and *Cichlidogyrus tilapiae* Paperna, 1960) and one member from genus *Scutogyrus* Pariselle & Euzet, 1995 (*Scutogyrus longicornis* Paperna & Thurston, 1969). The prevalence was 100% with mean intensity 46.75 ± 3.3 throughout the study period. In this study, there were no significant preference for the distribution of monogenean parasites on the gill arches on the left and right sides of its host. The second and third gills arch was more preferable by the parasite. The effects of temperature, dissolved oxygen, pH, nitrate, nitrite and phosphate in the water body was not significant with the mean intensity of monogenean gill parasites except ammonia, showed significant differences ($p<0.05$).

Abstrak tesis yang dikemukan kepada senat Universiti Malaysia Terengganu sebagai memenuhi keperluan untuk Ijazah Master Sains

KAJIAN TENTANG MONOGENEAN PARASIT INSANG PADA IKAN TILAPIA MERAH (*Oreochromis* sp.) BERHUBUNG DENGAN PARAMETER FISIKOKIMIA AIR DI SUNGAI COMO, TASIK KENYIR

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Sektor akuakultur telah menjadi satu vektor yang penting bagi kemasukan, perpindahan dan penyebaran penyakit dan parasit ikan. Sebuah projek ternakan ikan air tawar dalam sangkar berskala besar telah dilancarkan di Sungai Como, Tasik Kenyir oleh Jabatan Perikanan Malaysia di mana tumbesaran ikan yang perlahan dan kematian ikan telah dilaporkan berlaku. Satu kajian telah dijalankan untuk meneliti profil kualiti air, taburan, prevalen bulanan dan min intensiti parasit monogenea yang menyerang ikan tilapia merah yang di pelihara di Tasik Kenyir dan hubungannya dengan parameter fizikal dan kimia tasik. Monogenean penting dalam ekologi kerana kitaran hidupnya yang mudah dan dianggap sebagai salah satu parasit yang penting dan sensitif kepada sebarang perubahan dalam kualiti air. Sebanyak 121 ekor ikan tilapia dari pelbagai saiz di ambil dari sangkar Sungai Como, Tasik Kenyir (Terengganu, Malaysia). Sampel ikan diambil secara rawak dari sangkar yang berbeza-beza selama 13 bulan bermula dari April 2011 sehingga April 2012.

Parameter air yang di ambil adalah suhu permukaan air, oksigen terlarut dan pH dengan menggunakan Multi-parameter MPS 556 YSI Model. Analisis ammonia, nitrit, nitrat dan fosfat dalam air dikaji menggunakan Hach kit (Drell 2800). Kajian parasit insang pada ikan tilapia merah di Tasik Kenyir telah menjumpai 6 jenis spesis monogenea, 5 daripada genus *Cichlidogyrus* Paperna, 1960 (*Cichlidogyrus halli* Price & Kirk, 1967, *Cichlidogyrus mbirizei*, *Cichlidogyrus thurstonae* Ergens, 1981, *Cichlidogyrus sclerosus* Paperna & Thurston, 1969, *Cichlidogyrus tilapiae* Paperna, 1960) dan satu dari genus *Scutogyrus* Pariselle & Euzet, 1995 (*Scutogyrus longicornis* Paperna & Thurston, 1969). Prevalen jangkitan adalah 100% manakala min intensiti adalah 46.75 ± 3.3 untuk keseluruhan kajian. Dalam kajian ini, tiada perbezaan yang signifikan ditunjukkan untuk taburan monogenean pada insang kiri dan kanan ikan. Insang yang ke dua dan ketiga lebih disukai oleh parasit. Kesan suhu, oksigen terlarut dalam air, pH, nitrit, nitrat dan fosfat dalam air adalah tidak signifikan dengan min intensiti parasit monogenea kecuali ammonia menunjukkan perbezaan yang signifikan ($p<0.05$).