

FISH HABITAT IN KENYIR LAKE AT LENTIC AREA USING
HYDRO-ACOUSTIC METHOD

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**FISH HABITAT IN KENYIR LAKE AT LENTIC AREA USING HYDRO-
ACOUSTIC METHOD**

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**This project report is submitted in partial fulfillment of the requirement of the
degree of Bachelor of Applied Science (Fisheries Science)**

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ABSTRACT

Fish habitat study had been conducted at Kenyir Lake with the duration of five months period from September 2005 until January 2006. The objectives of this study are to determine water parameter suitable as fish habitat, to determine the presence of fish schools in Kenyir Lake and to determine fish species at different depths of water. Fish habitat is a components of aquatic system on which fish depend for feeding, breeding and growth to maturity. This study incorporated hydro-acoustic sampling for bathymetry, substrate type and fish distribution in Kenyir Lake. Data were collected using echo-sounder system, vessel and Differential Global Positioning System enabling positions with the respective depths to be recorded in a laptop. Result indicated that water level and volume increase during monsoon. Hydro-acoustic method was an effective way to map and monitor important physical and seasonal habitat parameters such as bathymetry and bottom characteristic. Fish were sampled during the day and night using a combination of entangles net and monofilament drift net. Physical and chemical parameters measured included water temperature, pH, dissolved oxygen, turbidity, water depth, ammonia, nitrite and phosphate. Biological parameter was investigated by collecting zooplankton using plankton net 62 μ and 100 μ and followed by laboratory analysis. The lake bathymetry was plot using 'surfer software' using the position and depth data.

Through this study, total species of fish caught were 12 species belongs to four families, and three orders had been identified. The most abundance species of fish in Kenyir Lake are *Barbonymus schwanenfeldii*, *Hampala macrolepidota* and *Labiobarbus lineatus*. These species originally from family Cyprinidae, order Cypriniformes. Statistical analysis has proven that, in the study area the migration of

fish did not occur and no significant difference of fish habitat at day and night. Schooling of fish also did not present in the study area due to the distribution of fish trapped on the net are random. Temperature of selected area ranged from 29.00 °C to 26.22 °C. Turbidity reading is low and ranged from 1.41 to 36.83 NTU. The pH reading is less than 7.0 and high in DO readings, 8.65 to 6.24 ppm. Temperature, turbidity, pH and DO reading decrease as depth increases. Ammonia and nitrite readings are 0.04 to 0.11 ppm and 0.14 to 0.1 ppm. Phosphate readings range from 0.3 to 0.32 ppm and these nutrients are important for primary production in lakes ecosystem. High primary production, stimulate growth of secondary consumer which are zooplankton and detritus. The most abundant zooplankton in Kenyir Lake is copepod, followed by copepod nauplius and cladocerans. Zooplanktons are important source of food for fish larvae. The habitat in Kenyir Lake changes according to seasons, during high water level, bottom structure and volume of water change. It provides large space for fish movements, diverse food and submerged plants that serve as nursery ground for fish.

ABSTRAK

Kajian habitat ikan telah dijalankan di Tasik Kenyir dalam tempoh lima bulan bermula dari bulan September 2005 hingga Januari 2006. objektif kajian ini adalah untuk menentukan parameter air yang sesuai untuk habitat ikan, menentukan kehadiran kumpulan ikan di Tasik Kenyir dan menentukan spesies ikan mengikut kedalaman air. Habitat ikan merupakan satu komponen di dalam sistem akuatik yang mana ikan bergantung untuk makanan, membiak dan mencapai kematangan. Kajian ini menggabungkan penyempelan hidro-akuastik untuk mengkaji 'bathymetry', jenis substrat dan taburan ikan di Tasik Kenyir. Data dikumpul menggunakan sistem penduga gema, bot dan 'Differential Global Positioning System' (DGPS) untuk membolehkan kedudukan dan kedalaman direkodkan di dalam komputer riba. Keputusan menunjukkan aras dan isipadu air meningkat ketika monsun. Kaedah ini adalah penting untuk memeta dan memantau parameter fizikal serta parameter habitat bermusim seperti 'bathymetry' dan kedaan dasar. Ikan disampel pada waktu siang dan malam menggunakan pukot tiga lapis dan pukot tangsi. Parameter fizikal dan kimia air termasuk suhu, pH, oksigen terlarut, turbiditi, kedalaman air, ammonia, nitrit dan fosfat. Parameter biologikal diukur dengan menyempel zooplankton menggunakan net 62 μ dan 100 μ , diikuti dengan analisis makmal. 'Bathymetry' tasik telah diplot dengan perisian 'surfer' menggunakan data kedudukan dan kedalaman.

Melalui kajian ini, jumlah spesies yang telah ditangkap ialah 12 spesies daripada empat famili, dan tiga order telah dikenal pasti. Spesies yang paling banyak di Tasik Kenyir ialah *Barbonymus schwanenfeldii*, *Hampala macrolepidota* dan *Labiobarbus lineatus*. Spesis-spesis ini berasal daripada famili Cyprinidae, order Cypriniformes.

Analisis statistik telah membuktikan migrasi tidak berlaku di kawasan kajian dan tiada perbezaan habitat ikan di waktu siang dan malam. Tidak terdapat kumpulan ikan di kawasan kajian kerana ikan terperangkap pada pukal secara random. Julat suhu di kawasan kajian adalah di antara 29 °C ke 26.22 °C. Bacaan turbiditi adalah rendah di antara 1.41 hingga 36.83 NTU. Bacaan pH pula kurang daripada 7.0 dan kandungan DO tinggi, sebanyak 8.65 hingga 6.24 ppm. Bacaan suhu, turbiditi, pH dan DO reading menurun dengan bertambahnya kedalaman. Nilai ammonia dan nitrit adalah 0.04 hingga 0.11 ppm dan 0.14 hingga 0.1 ppm. Bacaan fosfat pula di antara 0.3 hingga 0.32 ppm. Nutrien-nutrien ini adalah penting untuk pengeluaran primer bagi ekosistem tasik. Pengeluaram primer yang tinggi, merangsang pertumbuhan pengguna sekunder iaitu zooplankton dan detritus. Kumpulan zooplankton yang terbanyak di Tasik Kenyir ialah copepod, diikuti oleh kopepod naupli dan cladosera. Zooplankton merupakan sumber makanan yang penting kepada larva ikan. Habitat ikan di Tasik Kenyir berubah mengikut musim, ketika air tinggi, struktur dasar dan isipadu air berubah. Perubahan ini menyebabkan ruang untuk ikan bergerak besar, makanan bertambah dan tumbuh-tumbuhan yang tenggelam menyediakan 'nursery ground' kepada ikan.