

# Water Quality and Aquatic Insects Study at the Lower Kinabatangan River Catchment, Sabah: In Response to Weak La Niña Event

(Kajian Kualiti Air dan Serangga Akuatik di Hilir Sungai Kinabatangan, Sabah: Respons kepada Fenomena La Niña Berskala Lemah)

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## ABSTRACT

*A study on water quality and aquatic insects has been conducted at the Lower Kinabatangan River Catchment, Sabah, Malaysia. The quality of water surface and aquatic insects' composition were studied in streams near to oil palm plantation (OP), secondary forest (SF) and oxbow lake (OB). The study also aims to identify the seasonal variation in the aquatic insects' composition during the weak La Niña event. A total of 135 water samples and 1678 aquatic insect individuals (four orders and 14 families) were collected during fieldwork campaign that spanned over the inter-monsoonal period, wet and dry seasons between October 2004 and June 2005. OP has the highest abundance of aquatic insects particularly during the dry season. Biological indices showed that all stations were in moderate water category. The water quality index (WQI) was calculated and indicated that the quality of the river categorised into Class II. Discriminant analysis (DA) was employed to classify the independent variables into mutually-exclusive groups. Suspended sediment (SS) and chemical oxygen demand (COD) were high during the wet season. Suspended sediment was high in oxbow lake and could be a strong reason behind low abundance of aquatic insects. Precipitation anomalies were found to affect seasonal variations of water quality and aquatic insects at the Lower Kinabatangan River.*

*Keywords: Aquatic insects; average score per taxa (ASPT); biological monitoring work party (BMWP); Lower Kinabatangan River catchment; water quality index (WQI)*

## ABSTRAK

*Sebuah kajian kualiti air dan serangga akuatik telah dilakukan di Hilir Sg. Kinabatangan, Sabah, Malaysia. Kajian ini bertujuan untuk mengkaji kualiti air serta serangga akuatik dari tiga jenis guna tanah: ladang kelapa sawit (OP), hutan sekunder (SF) dan tasik ladam (OB); serta untuk mengenal pasti variasi musim sewaktu fenomena La Niña berskala lemah. Sebanyak 135 sampel air telah dianalisis dan 1678 individu serangga akuatik (empat order dan 14 famili) telah berjaya dikumpul sewaktu kerja lapangan dijalankan. Kajian dilaksanakan sewaktu musim perantara-monsoon, musim hujan dan kering dari Oktober 2004 sehingga Jun 2005. OP didapati mempunyai taburan serangga akuatik yang tertinggi khususnya sewaktu musim kering. Indeks biologi menunjukkan semua stesen persampelan dikategorikan sebagai sederhana bersih. Pengiraan Indeks Kualiti Air juga turut dilakukan dan kualiti Hilir Sg Kinabatangan berada di dalam kelas II. Analisis diskriminan (DA) telah dilaksanakan bagi mengelaskan pemboleh ubah tak bersandar berdasarkan kumpulan yang sama. Sedimen terampai (SS) dan permintaan oksigen kimia (COD) mempunyai nilai yang tinggi sewaktu musim hujan. Nilai SS yang tinggi di kawasan tasik ladam berkemungkinan menjadi faktor penyumbang jumlah taburan serangga akuatik yang rendah di situ. Anomali hujan didapati mempengaruhi kualiti air dan taburan serangga akuatik mengikut variasi musim di Hilir Sg. Kinabatangan.*

*Kata kunci: Hilir Sungai Kinabatangan; indeks kualiti air (WQI); purata skor setiap takson (ASPT); serangga akuatik; unit kerja kawalan biologi (BMWP)*