

ISOLATION AND IDENTIFICATION OF FREE-LIVING
AMOEBAE IN WATER OF HUTAN LIPUR
JAMBU BONGKOK, TERENGGANU

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FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU

2008

**ISOLATION AND IDENTIFICATION OF FREE LIVING AMOEBAE IN
WATER AT HUTAN LIPUR JAMBU BONGKOK, TERENGGANU**

By
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the requirements for award of the degree of
Bachelor of Science (Biological Sciences)

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **ISOLATION AND IDENTIFICATION OF FREE LIVING AMOEBAE IN WATER AT HUTAN LIPUR JAMBU BONGKOK, TERENGGANU** oleh **NUR IZZATI BT ROSEMI**, no. matrik: **UK12212** telah diperiksa dan semua pembedaan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh ijazah **SARJANA MUDA SAINS (SAINS BIOLOGI)**., Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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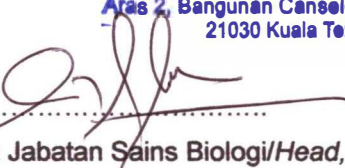
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DECLARATION

I hereby declare that this thesis entitled **Isolation and Identification of Free Living Amoebae in Water at Hutan Lipur Jambu Bongkok, Terengganu** is the result of my own research except as cited in references.

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ABSTRAK

Tujuan kajian ini dijalankan adalah untuk mengasing dan mengecam spesies ameba, mengkaji taburan dan bilangan species ameba dan menentukan perkaitan di antara kualiti air dan spesies ameba di dalam air Hutan Lipur Jambu Bongkok, Terengganu. Sampel air diambil (5cm hingga 10cm dari permukaan air) menggunakan sembilan botol polietilin yang steril pada sembilan lokasi pensampelan. Proses pengasingan ini dilakukan dengan menggunakan kaedah turasan bermembran (menggunakan 0.45 μm kertas nitrat selulos). Proses pengkulturan dilakukan dan diulang sehingga kultur yang tulen diperolehi. Proses pengecaman dilakukan berdasarkan morfologi sista dan tropozoit mengikut kekunci Page (1988). Penilaian kualiti air dijalankan di lokasi pensampelan dan di makmal. Sekurang-kurangnya tiga spesies ameba dijumpai dalam kajian ini iaitu *Platyamoeba placida*, *Acanthamoeba castellanii*, dan *Acanthamoeba polyphaga*. *Platyamoeba placida* merupakan spesies yang paling kerap dijumpai pada lokasi L1, L2, L3, L4, L6, L7 dan L8 berbanding spesies ameba yang lain. pH dan suhu air yang diperolehi berjulat dari 4.42 -6.24 dan 26-30 $^{\circ}\text{C}$ masing-masing sementara nilai TDS berjulat dari 0.019-0.025 g/l. Kesemua lokasi pensampelan menunjukkan nilai saliniti yang rendah berjulat dari 0.01-0.02ppt. Secara keseluruhannya, nilai TSS adalah meningkat dari lokasi L1 sehingga L9 dan berlawanan dengan nilai DO. Terdapat perkaitan antara kualiti air dan taburan spesies ameba dalam air. *Platyamoeba placida* dapat hidup dalam air pada nilai DO yang berjulat dari 1.27-7.97mg/L dan pada nilai TSS 41-96mg/L. *A. castellanii* hadir pada nilai DO 2.80 mg/L dan pada nilai TSS 70mg/L. *A. polyphaga* dapat hidup pada nilai DO 1.13 mg/L dan pada nilai TSS 106 mg/L . Secara keseluruhannya, semua ameba mempunyai nilai TDS yang berjulat dari 0.019-0.025 g/L.

ABSTRACT

The aims of this study were to isolate and identify the amoeba species, to determine their distribution and number of species and to associate between physico-chemical parameter of water and amoeba species in water at Hutan Lipur Jambu Bongkok, Terengganu. Water samples were collected (5cm to 10cm depth from water surface) by using nine sterile polyethylene bottles at nine sampling sites. The isolation process was carried out by using a membrane filtration unit (0.45 μm cellulose nitrate paper). The cultivation and sub-cultivation were done until pure cultures were obtained. The identification of amoebae was done based on morphology of cyst and trophozoites according to the Key of Page (1988). Water quality assessment was done *in situ* and in the laboratory. At least, three different amoeba species were found in this study and were identified as *Platyamoeba placida*, *Acanthamoeba castellanii*, and *Acanthamoeba polyphaga*. *Platyamoeba placida* was the most frequently encountered species of amoebae since it was found at L1, L2, L3, L4, L6, L7 and L8 compared to the other species of amoebae. The water pH and water temperature were ranging from 4.42-6.24 and 26-30 $^{\circ}\text{C}$ respectively, while TDS values were ranging from 0.019-0.025 g/l. All the sampling sites showed low water salinity ranging from 0.01-0.02ppt. Overall, the values of TSS were increasing from L1 to L9 and inversely related with DO values. There was a relationship between water quality and distribution of amoeba species in the water body. *Platyamoeba placida* can live in water with DO values ranging from 1.27-7.97mg/L and TSS 41-96mg/L. *A. castellanii* were available in water with DO values at 2.80 mg/L and TSS values at 70mg/L. *A. polyphaga* was survive with DO values at 1.13 mg/L and TSS values at 106 mg/L. Overall, the TDS values were ranging from 0.019-0.025 g/L for all amoebae.