

STUDY ON LIGHT PERFORMING MARINE  
ZOOPLANKTON GROWTH  
USING LIGHT TRAPS

PRINCE ALI CHANDRA, SEGARAN

FACULTY OF SCIENCE AND TECHNOLOGY  
UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

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A STUDY ON LIGHT RESPONSIVE MARINE  
ZOOPLANKTON CAUGHT  
USING LIGHT-TRAPS

By  
Thirukanthan a/l Chandra Segaran

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FAKULTI SAINS DAN TEKNOLOGI  
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

## PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

A Study on Light Responsive Marine Zooplankton Caught Using Light-Traps oleh  
Thirukanthan S/O Chandra Segaran No. Matrik UK 8270 telah diperiksa dan semua  
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Sarjana Muda Sains (Biologi Marin) Fakulti Sains dan Teknologi, Kolej Universiti Sains  
dan Teknologi Malaysia.

Disahkan oleh:

Penyelia Utama

Nama : **LIEW HOCK CHARK**  
*Associate Professor*  
Faculty of Science and Technology  
KUSTEM  
Cop Rasmi : 21030 Kuala Terengganu MALAYSIA

Tarikh : 2/5/06

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## ABSTRACT

Collecting zooplankton using their natural attraction to light has been successfully employed by aquatic ecologists for many years (Floyd *et al.* 1984; Gehrke 1991; Dewey and Jennings 1992; Marchetti and Moyle 2000; Humphries *et al.* 2002; Doherty 1987). The design of light trap that is used in this study has five openings in the attraction chamber and one collection chamber. Two coloured light sources were used, that is a yellow chemical stick and a green chemical stick to determine the efficiency of different coloured lights. The study was done at Redang Island, Mengabang water and Setiu wetland. On total, green light captured 21457 zooplankton individuals whereas yellow light captured 12221 zooplankton individuals from all three sampling locations. Out of the total number of zooplankton collected using green light, 85% comprised of holoplankton whereas yellow light zooplankton samples comprised of 68% of holoplankton. When comparing the abundance of zooplankton with the colour of light used, there were significant difference, with green being a better attractant towards zooplankton at Redang Island (paired t-test,  $p=0.00001$ ) and Setiu wetland (paired t-test,  $p=0.0229$ ) whereas there were no significant difference at Mengabang water (paired t-test,  $p=0.0838$ ). On comparing the diversity of zooplankton, the highest zooplankton taxa diversity was recorded from Setiu wetland of green (1.3038), and yellow (1.3348) lights. The benefits of using light traps in collecting zooplankton can be both economical and effective to some extent if compared to conventional methods. The specimens collected using light traps remain alive and in good condition, suitable for further experimentations.

## ABSTRAK

Pemerangkapan zooplankton menggunakan daya tarikan asalnya iaitu cahaya telah lama berjaya diaplikasikan oleh ahli-ahli ekologi bagi beberapa tahun (Floyd *et al.* 1984; Gehrke 1991; Dewey dan Jennings 1992; Marchetti dan Moyle 2000; Humphries *et al.* 2002; Doherty 1987). Reka bentuk perangkap cahaya yang telah diggunakan di dalam kajian ini mempunyai lima pembukaan pada ruang tarikan dan satu ruang pengumpulan. 'chemical stick' telah diggunakan sebagai punca cahaya yang terdiri daripada dua warna iaitu warna hijau and kuning untuk mengkaji keberkesanan warna cahaya yang berlainan. Kajian ini telah dijalankan di Pulau Redang, Mengabang dan 'Setiu wetland'. Jumlah keseluruhannya, cahaya hijau berjaya memerangkap 21457 individu zooplankton manakala cahaya kuning berjaya memerangkap 12221 individu zooplankton dari ketigatiga lokasi persampelan. Daripada jumlah tersebut, 85% merupakan zooplankton daripada kumpulan holoplankton bagi cahaya hijau manakala, bagi cahaya kuning, 68% daripada jumlah zooplankton merupakan holoplankton. Perbandingan jumlah zooplankton dengan cahaya yang digunakan menunjukkan terdapatnya perbezaan yang signifikansi, dengan cahaya hijau mempunyai daya tarikan zooplankton yang lebih kuat di Pulau Redang (paired t-test,  $p= 0.00001$ ) dan 'Setiu wetland' (paired t-test,  $p=0.0229$ ) manakala tiada perbezaan yang signifikasi pada sampel Mengabang (paired t-test,  $p=0.0838$ ). Perbandingan diversiti zooplankton menunjukkan bahawa, diversiti 'taxa' yang tertinggi didapati di 'Setiu wetland' bagi cahaya hijau (1.3038) dan kuning (1.3348). Kelebihan menggunakan perangkap cahaya dalam memerangkap zooplankton adalah kebaikan dari segi ekonomi dan lebih efektif jika dibandingkan dengan kaedah konvensional. Spesimen yang diperangkap adalah masih hidup dan berkeadaan baik, sesuai diggunakan untuk kajian yang lebih lanjut.