

A STUDY ON THE ZOOPLANKTON COLLECTED
BY LIGHT TRAPS NEAR A CORAL REEF

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A STUDY ON THE ZOOPLANKTON COLLECTED
BY LIGHT TRAPS NEAR A CORAL REEF

By
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LIST OF ABBREVIATIONS

Abbreviation	Meaning
LED	Light Emitting Diode
DSL	deep scattering layers
DVM	diel vertical migration
ANOVA	Analysis of Variance
SNK	Student-Newman-Keuls
NGOs	Non-governmental organizations
h	hour
cm	centimeter
m	meter
km	kilometer
L	liter
V	volt
ϕ	diameter

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ABSTRACT

A study on the zooplankton collected by cost-effective light traps near a coral reef was conducted in Teluk Bakau, Pulau Redang. In Experiment A, a light trap with white LEDs was deployed weekly over the course of one month. The third quarter of the moon phase recorded 13 taxa of zooplankton whereas only four taxa of zooplankton were trapped during full moon. Consequently, zooplankton diversity was highest during the third quarter (0.5732) and lowest during full moon (0.1121). A total of 13,446 individuals of zooplankton were collected during the lunar cycle, of which 6,885 individuals were collected during the new moon (51%). A low abundance of individuals was recorded during full moon (1%). In Experiment B, colour LEDs (white, green, yellow, red and blue) were used. Ten taxa of zooplankton were found in the light trap samples when white LEDs were used. Blue LEDs, on the other hand, trapped only two taxa of zooplankton. The highest zooplankton diversity was recorded from the second replicates of the green (0.2433) and red (0.4051) lights. Zooplankton collected with the white, green and yellow lights were statistically diverse in relation to sampling times (two-way ANOVA, $F = 9.2581$, $p = 0.0316$). Significant difference was also detected in the abundance of zooplankton collected with the white, red and blue lights (two-way ANOVA, $F = 21.2814$, $p = 0.0449$). The study provides an economical method for the collection of zooplankton especially with regard to larger species. Since the zooplankton collected in the light traps remain alive and in good condition, the samples could be used in further experimentations.

KAJIAN KE ATAS ZOOPLANKTON YANG DIKUMPUL DENGAN PERANGKAP BERCAHAYA BERDEKATAN DENGAN TERUMBU KARANG

ABSTRAK

Satu kajian ke atas zooplankton yang dikumpul dengan menggunakan perangkap bercahaya berkos rendah telah dijalankan berdekatan dengan terumbu karang di Teluk Bakau, Pulau Redang. Dalam Eksperimen A, perangkap bercahaya dengan LED putih telah digunakan setiap minggu untuk masa sebulan. Sebanyak 13 kelas zooplankton telah direkodkan pada suku ketiga kitaran bulan manakala hanya empat kelas zooplankton telah diperangkap pada bulan purnama. Sehubungan dengan itu, kepelbagaian zooplankton adalah tertinggi pada suku ketiga (0.5732) dan terendah pada bulan purnama (0.1121). Sebanyak 13,446 individu zooplankton telah dikumpul sepanjang satu kitaran bulan, dari mana 6,885 individu dikumpulkan pada gerhana bulan (51%). Kelimpahan yang rendah direkodkan pada bulan purnama (1%). Dalam Eksperimen B, LED berwarna (putih, hijau, kuning, merah dan biru) telah digunakan. Sepuluh kelas zooplankton dijumpai apabila LED putih digunakan. LED biru pula hanya berjaya memerangkap dua kelas zooplankton. Kepelbagaian zooplankton yang tertinggi direkodkan daripada replikat kedua LED hijau (0.2433) and merah (0.4051). Kepelbagaian zooplankton yang dikumpul dengan LED putih, hijau dan kuning berhubung dengan masa didapati berbeza secara statistik (ANOVA dua-hala, $F = 9.2581$, $p = 0.0316$). Perbezaan bererti juga didapati dalam kelimpahan zooplankton yang dikumpul dengan LED putih, merah dan biru (ANOVA dua-hala, $F = 21.2814$, $p = 0.0449$). Kajian ini menyediakan satu kaedah yang ekonomik terutamanya dalam pengumpulan spesies zooplankton yang lebih besar. Oleh sebab zooplankton yang terperangkap dalam perangkap bercahaya masih hidup dan dalam keadaan yang baik, sampel tersebut boleh digunakan dalam kajian seterusnya.