

INSECT DIVERSITY, SUCCESSION AND DEVELOPMENT
IN TWO DIFFERENT COASTAL AREAS TO
AID MEDICO-LEGAL INVESTIGATIONS

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INSECT DIVERSITY, SUCCESSION AND DEVELOPMENT IN TWO DIFFERENT
COASTAL AREAS TO AID MEDICO-LEGAL INVESTIGATIONS

By
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**PENGAKUAN DAN PENGESAHAN LAPORAN
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: INSECT DIVERSITY, SUCCESSION AND DEVELOPMENT IN TWO DIFFERENT COASTAL AREAS TO AID MEDICO-LEGAL INVESTIGATIONS oleh Zurina Moktar no. matrik: UK 8471 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh ijazah Sarjana Muda Sains Gunaan -Pemuliharaan dan Pengurusan Biodiversiti, Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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LIST OF ABBREVIATIONS

am	-	amount
cm	-	centimeter
CO ₂	-	carbon dioxide
H ₂ S	-	hydrogen sulphide
hrs	-	hours
kg	-	kilogram
km	-	kilometer
KOH	-	pottasium hydroxide
m	-	meter
mm	-	millimeter
N ₂	-	nitrogen
NH ₃	-	ammonia
PMI	-	postmortem interval
RH	-	relative humidity
sp	-	species

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ABSTRACT

A study on insect utility in assisting investigation of unattended deaths was carried out in west and east Malaysian coastal areas using rabbit carrions as models. This study aimed to determine insect diversity, succession and development over decomposition period. Insect inventory revealed a total of 17 species from 12 families and three orders (Diptera, Coleoptera and Hymenoptera). They facilitated decomposition and formed distinct faunal succession; Diptera were the pioneer colonizer followed by Coleoptera whereas Hymenoptera were present in almost all the stages. *Chrysomya megacephala*, *Ch. rufifacies*, *Musaca domestica* and *Sarcophaga sp.* were the dominant species identified. Insect development was documented to be climatologically dependent whereby; humidity inhibited their colonization and high temperatures, over 31°C shorten their life histories. Major application of the succession pattern and development is to estimate Postmortem Interval. Findings of this study are significant to aid investigations with entomological evidence and in the same time improve forensic entomology database which is lacking in our region.

KEPELBAGAIAN, KEJAYAAN DAN PERKEMBANGAN SERANGGA DI DUA KAWASAN PANTAI BERBEZA DALAM MEMBANTU PENYIASATAN

ABSTRAK

Kajian mengenai potensi serangga dalam membantu penyiasatan jenayah dijalankan di kawasan pantai timur dan barat Malaysia dengan menggunakan model arnab. Tujuh belas spesies serangga daripada 12 famili dan tiga order (Diptera, Coleoptera dan Hymenoptera) dikenalpasti mempunyai kepentingan forensik. *Chrysomya megacephala*, *Ch. rufifacies*, *Musaca domestica* and *Sarcophaga sp.* (Diptera) merupakan sepesis dominan. Serangga terlibat dalam proses penguraian dan membentuk corak kejayaan dalam lima fasa penguraian. Kajian ini membuktikan perkembangan serangga adalah bergantung kepada keadaan cuaca di mana kelembapan melambatkan perkembangan dan suhu yang tinggi sehingga 31°C memendekkan tempoh perkembangan. Corak kejayaan dan perkembangan serangga diaplikasikan dalam menganggarkan jeda posmortem bagi mayat manusia atau bangkai haiwan. Kepelbagaian serangga yang diperolehi melalui inventori, menyediakan pengkalan data di kawasan geografi dan ekologi yang spesifik. Dapatan kajian ini berguna dalam membantu penyiasatan kes-kes bunuh dengan serangga sebagai bahan bukti sekaligus memperbaiki kekurangan maklumat entomologi forensik di negara ini.