

COMPARATIVE STUDY OF BACTERIAL DIVERSITY AND  
ANTIBIOTIC RESISTANCE ON BUBBLE GUMMERS IN TWO  
DIFFERENT COUNTRY AREAS

HOAN THUAN, NGUYEN THUY, NGUYEN THUAN, NGUYEN THUAN

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COMPARATIVE STUDY OF DIPTERAN DIVERSITY AND THEIR SUCCESSION  
ON RABBIT CARRION IN TWO DIFFERENT RESIDENTIAL AREAS

By

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: COMPARATIVE STUDY OF DIPTERAN DIVERSITY AND THEIR SUCCESSION ON RABBIT CARRION IN TWO DIFFERENT RESIDENTIAL AREAS oleh WAN FARAH HANIM BINTI WAN MUHAMAD, no. matrik: UK 10654 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, Universiti Malaysia Terengganu.

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## LIST OF ABBREVIATIONS

BOD	-	byproduct of decomposition
cm	-	centimeter
D	-	Dark
E	-	East
g	-	gram
HWK	-	hot water killed
Kg	-	kilogram
KOH	-	potassium hydroxide
L	-	Light
<i>M.</i>	-	<i>Muscidae</i>
mm	-	millimeter
N	-	North
PMI	-	post mortem interval
RH	-	relative humidity
Sp	-	species

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## ABSTRACT

Field studies on exposed rabbit carcasses were carried out over 14 days in two different residential areas in East Coast of Peninsular Malaysia (Tok Jembal, Kuala Terengganu and Lundang, Kota Bharu) to determine the diversity of Diptera, to estimate post mortem interval based on the succession pattern and body length development and also the climatological factors that affects them over different stages of decomposition. Five stages of decomposition were recognized in the study consisting of fresh, bloated, decay, post decay and skeletal. Present dipteran inventory revealed six families of Diptera, which consisted of Calliphoridae, Sarcophagidae, Muscidae, Stratiomyidae, Phoridae and Sepsidae. A total of 12 genus and species with all of them have forensic importance were successfully recorded. One unidentified species was present singly at a very restricted time during post decay stage. Calliphoridae, Sarcophagidae and Muscidae were among the early arrival found on carcass. The number of species present in the succession series increased from the fresh stage reached a maximum in the decay stage and gradually declined towards post decay stage. No flies were observed during skeletal stage. Development of dipteran was documented to be climatologically dependent whereby at almost similar high temperatures, higher relative humidity took into extent to lengthen the development duration. High temperature with low relative humidity induced mummification in rabbit carcass at Tok Jembal resulting in long duration of post decay stage. Rainfall also affects dipteran occurrence and development. Findings of this study would be essential in attempt to answer questions in crime investigation by using entomological evidence and enhance forensic entomology database within local region.

# **KAJIAN PERBANDINGAN KEPELBAGAIAN DAN SESARAN DIPTERA PADA BANGKAI ARNAB DI DUA KAWASAN PERUMAHAN BERBEZA**

## **ABSTRAK**

Kajian lapangan ke atas bangkai arnab dijalankan selama 14 hari di dua kawasan perumahan berbeza di Pantai Timur Semenanjung Malaysia (Tok Jembal, Kuala Terengganu dan Lundang, Kota Bharu) untuk mengenalpasti kepelbagaian Diptera, menganggarkan tempoh kematian berdasarkan corak sesaran dan perkembangan lalat serta mengenalpasti faktor cuaca yang memberi kesan kepada Diptera sepanjang berlakunya proses pereputan. Lima peringkat pereputan dikenalpasti semasa kajian iaitu peringkat segar, kembang, reput, selepas pereputan dan rangka. Kajian mendedahkan 6 kumpulan famili lalat yang terdiri daripada Calliphoridae, Sarcophagidae, Muscidae, Stratiomyidae, Phoridae dan Sepsidae. Sebanyak 12 genus dan spesies kesemuanya mempunyai kepentingan forensik telah berjaya direkodkan. Satu spesies yang tidak dapat dikenalpasti dijumpai dalam jangka waktu yang sangat terhad semasa peringkat selepas pereputan. Calliphoridae, Sarcophagidae dan Muscidae merupakan antara yang terawal hinggap di bangkai. Bilangan spesies dalam siri sesaran meningkat dari peringkat segar, maksimum semasa pereputan dan menurun secara perlahan apabila bangkai mengakhiri proses selepas pereputan. Perkembangan Diptera direkodkan sebagai berkait rapat dengan faktor cuaca di mana pada suhu tinggi yang hampir sama di kedua-dua tempat, kelembapan relatif memainkan peranan penting dengan memanjangkan tempoh perkembangan lalat. Suhu tinggi dengan kelembapan relatif yang rendah telah mengakibatkan pemumian pada bangkai arnab di Tok Jembal menyebabkan tempoh yang panjang untuk peringkat selepas pereputan. Hujan juga memberi kesan kepada kehadiran dan perkembangan lalat. Penemuan dalam kajian ini penting untuk menjawab persoalan dalam kes jenayah berdasarkan bukti entomologi serta menambahkan pangkalan data forensik entomologi di kawasan tempatan.