

COMPARATIVE STUDY OF DIETARY DIVERSITY AND  
FLORA COMPOSITION ON RABBIT GROWTH IN RUMEN  
AND SMALL INTESTINE OF RUMINANTS

DIETARY DIVERSITY

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COMPARATIVE STUDY OF DIPTERAN DIVERSITY AND THEIR  
SUCCESSION ON RABBIT CARRION IN BUKIT BUCU,  
TERENGGANU AND PENANG HILL, PENANG

By

James Chye Tze Wuen

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the requirements for the degree of  
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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 BUKIT BUCU, TERENGGANU AND PENANG HILL, PENANG oleh JAMES CHYE TZE WUEN, no. matrik: UK10306 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

ADH	-	accumulated degree hours
am	-	ante meridiem
E	-	east
<i>et al</i>	-	et alii (and others)
KOH	-	potassium hydroxide
N	-	north
n	-	number of cases
p	-	probability
pm	-	post meridiem
PMI	-	postmortem interval
RH	-	relative humidity
sp	-	species
<i>t</i> -test	-	student test

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## ABSTRACT

Successional patterns of dipteran fauna on rabbit carrions were studied in two hilly areas of Bukit Bucu, Terengganu and Penang Hill, Penang to determine the dipteran sequence and postmortem interval over 14 days. During this period, a total of 327 individuals of adult dipteran flies were identified belonging to the following families: Calliphoridae, Drosophilidae, Muscidae, Piophilidae, Phoridae, Sarcophagidae, Sepsidae, Sphaeroceridae, Tipulidae. Five decomposition stages were observed (fresh, bloated, active decay, advanced decay and skeletal). During the fresh and bloated stages, Calliphoridae dominated the carrion in both study sites. *Lucilia cuprina* and *Chrysomya rufifacies* were the initial colonizers of the carrion in Bukit Bucu and Penang Hill, respectively. During the active decay stage, the most abundant family was Sphaeroceridae, although Piophilidae also stood out. During the advanced decay stage, Sphaeroceridae again dominated the carrion in Bukit Bucu. In contrast, Sepsidae took control of the carrion in Penang Hill. No flies were recorded in the skeletal stage. Body length development and accumulated degree hours of larvae from oviposition to adult eclosion were different among the dominant species collected. Climatic conditions such as temperature, rainfall and wind speed were significantly different between study sites and may directly influence the dipteran succession. In addition, mean maggot mass temperatures were significantly higher than mean ambient temperatures for both study sites while wind speed was found to be negatively correlated to the number of species and individuals. Therefore, environmental parameters can affect the presence and abundance of dipteran communities and their life cycle as well as stages of decomposition.

**KAJIAN PERBANDINGAN KEPELBAGAIAN DAN SESARAN DIPTERA  
PADA BANGKAI ARNAB DI BUKIT BUCU, TERENGGANU  
DAN BUKIT BENDERA, PULAU PINANG**

**ABSTRAK**

Corak sesaran telah dijalankan di kawasan Bukit Bucu, Terengganu dan Bukit Bendera, Pulau Pinang bagi mengkaji perkembangan dan sesaran Diptera pada bangkai arnab selama 14 hari berturut-turut. Semasa kajian dijalankan, sebanyak 327 ekor lalat dewasa Diptera telah dikenal pasti tergolong dalam famili seperti berikut: Calliphoridae, Drosophilidae, Muscidae, Piophilidae, Phoridae, Sarcophagidae, Sepsidae, Sphaeroceridae, Tipulidae. Lima peringkat sesaran telah diperhatikan iaitu segar, buntal, penguraian aktif, penguraian lanjutan dan rangka. Pada peringkat segar dan buntal, Calliphoridae mendominasi bangkai. *Lucilia cuprina* merupakan penghuni pertama bangkai di Bukit Bucu manakala *Chrysomya rufifacies* pada bangkai di Bukit Bendera. Sphaeroceridae merupakan famili lalat terbanyak di peringkat penguraian aktif walaupun Piophilidae turut dijumpai. Pada peringkat penguraian lanjutan, Sphaeroceridae mendominasi bangkai di Bukit Bucu manakala Sepsidae pada bangkai di Bukit Bendera. Tiada lalat yang ditangkap pada peringkat rangka. Perkembangan jasad dan penambahan darjah jam larva adalah berbeza bagi spesies yang dikumpul. Keadaan cuaca seperti suhu, hujan dan angin adalah berbeza antara Bukit Bucu dan Bukit Bendera dan bermungkinan memberi kesan ke atas sesaran Diptera. Selain itu, min suhu timbunan larva adalah lebih tinggi daripada suhu persekitaran bagi kedua-dua kawasan manakala angin membawa kesan yang negatif kepada lalat dalam mengurangkan bilangan spesies dan individu. Oleh sebab itu, keadaan persekitaran boleh memberi kesan kepada peringkat sesaran termasuk kitaran hidup dan komuniti Diptera.