

ECTOPARASITES COMPOSITION OF BATS AT MANEROME  
AREA OF UNIVERSITI MALAYSIA TERENGGANU,  
TERENGGANU

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ECTOPARASITES COMPOSITION OF BATS AT MANGROVE AREA OF  
UNIVERSITI MALAYSIA TERENGGANU,  
TERENGGANU

By

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	-	<b>Explanation</b>
UMT	-	Universiti Malaysia Terengganu
SPSS	-	Statistical Process for Social science
Nr	-	Number
<i>C</i>	-	<i>Cynopterus</i>
<i>E</i>	-	<i>Eonycteris</i>
<i>R</i>	-	<i>Rousettus</i>
Spp	-	Species
S	-	Sex
Rep	-	Reproductive status
FA	-	Forearm
Wgt	-	Weight
Ec	-	Ectoparasites
F	-	Female
M	-	Male
A	-	Adult
J	-	Juvenile
NR	-	Non-reproduvtive
LL	-	Late lactating
PL	-	Post Lactating
L	-	Lactating
P	-	Pregnant
NYC	-	<i>Nycteribia</i> spp.
STR	-	<i>Streblib</i> sp.
EYN	-	<i>Eyndhovia euryallis</i>
SPI	-	<i>Spinturnix paracuminatus</i>
ORN	-	<i>Ornithodoros</i> sp.

CTE	-	<i>Ctenocephalides</i> sp.
ECTO	-	Ectoparasite
TEMP	-	Temperature

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## ABSTRACT

The relationship between bats and their ectoparasites was examined. A total of 112 Megachiropteran were captured, including *Cynopterus brachyotis*, *C. spihinx*, *C. horsfieldii*, *Eonycteris splacea* and *Rousettus amplexicaudatus*. As for the ectoparasites, 139 individuals from seven species (four orders) have been collected. The most dominant order with the highest number of species and individuals is diptera, with three species included *Nycteribia* sp. 1, *Nycteribia* sp. 2 and *Streblib* sp., totally 115 individuals; while the most dominant ectoparasite species was *Nycteribia* sp. 1 with 71 individuals. Others ectoparasites that obtained were *Spinturnix paracuminatus* and *Eyndhovia euryallis* from mesostigmata, *Ctenocephalides* sp. from siphonaptera and *Ornithodoros* sp. from ixodida. The highest ectoparasites prevalence rates had found in *Cynopterus horsfieldii*. Ectoparasites were more prevalent on female hosts and lactating hosts, while juvenile hosts had higher infection rate. Factors that influenced ectoparasite composition, prevalence and abundance on different bats species were their roosting habit, age, sex, reproductive status, defense behavioral and microclimate of their body. The results obtained in this study and enriched ectoparasites checklist may have importance as supplementary data and reference for future bats management and conservation of mangrove area of UMT.

# KOMPOSISI EKTOPARASIT PADA KELAWAR DI KAWASAN PAYA BAKAU DI UNIVERSITI MALAYSIA TERENGGANU, TERENGGANU.

## ABSTRAK

Hubungan antara kelawar dengan ektoparasitnya telah ditentukan. Sejumlah 112 individu kelawar dari order Megahiroptera telah ditangkap, merangkumi *Cynopterus brachyotis*, *C. spihinx*, *C. horsfieldii*, *Eonycteris splacea* dan *Rousettus amplexicaudatus*. Bagi ektoparasit pula, 139 individu dari tujuh spesies (empat order) telah diperolehi. Order yang paling dominan dengan jumlah spesies dan individu yang paling tinggi ialah diptera, mengandungi tiga spesies termasuk *Nycteribia* sp. 1, *Nycteribia* sp. 2 dan *Streblib* sp., sejumlah 115 individu; Sementara itu, spesies ektoparasit yang paling dominan ialah *Nycteribia* sp. 1 dengan 71 individu. Ektoparasit lain yang telah dikumpul ialah *Spinturnix paracuminatus* dan *Eyndhovia euryallis* dari mesostigmata, *Ctenocephalides* sp. dari siphonaptera dan *Ornithodoros* sp. dari ixodida. *Cynopterus horsfieldii* mempunyai kadar kelaziman ektoparasit yang paling tinggi. Semua ektoparasit menunjukkan kadar kelaziman yang lebih tinggi terhadap perumah betina dan perumah menyusui manakala perumah remaja mempunyai kadar jangkitan ektoparasit yang lebih tinggi. Faktor yang mempengaruhi komposisi, kadar kelaziman dan kelimpahan ektoparasit terhadap pelbagai spesies kelawar itu ialah tabiat bersarang, umur, seks, tahap pembiakan, sifat pertahanan dan iklim mikro badan kelawar. Hasil kajian ini dan senarai semak yang telah diperkayakan penting sebagai data tambahan dan rujukan untuk pengurusan dan pemuliharaan kelawar pada masa dapan di kawasan paya bakau UMT.



## ABSTRACT

The relationship between bats and their ectoparasites was examined. A total of 112 Megachiropteran were captured, including *Cynopterus brachyotis*, *C. spihinx*, *C. horsfieldii*, *Eonycteris splacea* and *Rousettus amplexicaudatus*. As for the ectoparasites, 139 individuals from seven species (four orders) have been collected. The most dominant order with the highest number of species and individuals is diptera, with three species included *Nycteribia* sp. 1, *Nycteribia* sp. 2 and *Streblib* sp., totally 115 individuals; while the most dominant ectoparasite species was *Nycteribia* sp. 1 with 71 individuals. Others ectoparasites that obtained were *Spinturnix paracuminatus* and *Eyndhovia euryallis* from mesostigmata, *Ctenocephalides* sp. from siphonaptera and *Ornithodoros* sp. from ixodida. The highest ectoparasites prevalence rates had found in *Cynopterus horsfieldii*. Ectoparasites were more prevalent on female hosts and lactating hosts, while juvenile hosts had higher infection rate. Factors that influenced ectoparasite composition, prevalence and abundance on different bats species were their roosting habit, age, sex, reproductive status, defense behavioral and microclimate of their body. The results obtained in this study and enriched ectoparasites checklist may have importance as supplementary data and reference for future bats management and conservation of mangrove area of UMT.

# KOMPOSISI EKTOPARASIT PADA KELAWAR DI KAWASAN PAYA BAKAU DI UNIVERSITI MALAYSIA TERENGGANU, TERENGGANU.

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