

A SURVEY ON THE BUSINESS AT THE CAMPUS OF KOLEJ  
UNIVERSITI SAINS DAN TEKNOLOGI MARA (KUSTEM)

GEOGRAPHY, GEOGRAPHIC CHARLES SWIDOL

KUSTEM CAMPUS MARA, SEMERIAH,  
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MARA (KUSTEM), MALAYSIA

2005

12088

PERDUSTAKOON  
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA (KUSTEM)

1100036849

LP 8 FST 4 2005



1100036849

## A survey on bird richness at the campus of Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM) / Georgiana Majorie Charles Sinidol.



PERPUSTAKAAN

**KOLEJ UNIVERSITI SAINS & TEKNOLOGI MALAYSIA  
21030 KUALA TERENGGANU**

1100036849

1100036849

DIREKTORENTAFEL NEDERLAND

Lihat sebelah

HAK MILIK  
PERPUSTAKAAN KUSTEM

A SURVEY ON BIRD RICHNESS AT THE CAMPUS OF KOLEJ UNIVERSITI  
SAINS DAN TEKNOLOGI MALAYSIA (KUSTEM)

By

Georgiana Majorie Charles Sinidol

Research Report submitted in partial fulfillment of  
the requirements for the degree of  
Bachelor of Applied Science (Biodiversity Conservation and Management)

Department of Biological Sciences  
Faculty of Science and Technology  
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA  
2005

This project should be cited as:

Sinidol, G. M. C. 2005. A Survey on Bird Richness at the campus of Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM). Undergraduate thesis, Bachelor of Applied Science in Biodiversity Conservation and Management, Faculty of Science and Technology, Kolej Universiti Sains dan Teknologi Malaysia, Terengganu. 73p.

No part of this project report may be produced by any mechanical, photographic, or electronic process, or in the form of phonographic recording, nor may it be stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from the author and the supervisor(s) of the project.



**JABATAN SAINS BIOLOGI  
FAKULTI SAINS DAN TEKNOLOGI  
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA**

## **PENGAKUAN DAN PENGESAHAN LAPORAN**

## **PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: A Survey on Bird Richness at the Campus of Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM) oleh Georgiana Majorie Charles Sinidol No. Matrik UK6908 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sains Gunaan Pemuliharaan dan Pengurusan Biodiversiti, Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

**Disahkan oleh:**

Penyelia Utama  
Nama:  
Cop Rasmi:

**WONG CHEE HUO**  
Lecturer  
Department of Biology  
**Fakulty of Science and Technology**  
**University College of Science and Technology Malaysia**  
(KUSTEM)  
21030 Kuala Terengganu.

Tarikh: 6/4/05

### **Penyelia Kedua (jika ada)**

Nama:

Cop Rasmi

Tarikh: .....

Ms. A

## Ketua Jabatan Sains Biologi

**Nama:** PROF. MADYA DR. NAKISAH BT. MAT AMIN  
*Kelua*

**Cop Rasmi:** Jabatan Sains Biologi  
Fakulti Sains dan Teknologi  
Kolej Universiti Sains dan Teknologi Malaysia  
(KUSTEM)  
21030 Kuala Terengganu.

## **ACKNOWLEDGEMENTS**

First and foremost, I would like to thank God for His unconditional love. To my supervisor, Mr. Wong Chee Ho who has been generously shared his knowledge, guidance, ideas and advices throughout the study and also exposing me to the meaning of scientific research, I thank you so much. I would also forward a special thanks to Mr. Yeap Chin Aik of Malaysian Nature Society (MNS) for his invaluable comments and guidance on my project.

I am also grateful and thankful to the Faculty of Science and Technology, KUSTEM for allowing me to use the facilities provided. To Mr. Amiruddin Ahamid, Mr. Razali Salam and Mr. Mohammad Embong, thank you for the cooperation and helps given throughout the six months, especially when I encountered problems in order to finish my project.

To my roommates and friends, I thank you all for being there to give constructive criticisms and ideas, thank you for being supportive and showing me the real meaning of friendship. I also would like to thank my family, especially my mother, Jane Chiew and my siblings, Geraldine, Germaine and Gordon, for giving me the unconditional support and love to finish this project. Last but not least, to everyone who was involved direct or indirectly during the completion of this project, I thank you for your supports and helps.

## TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<b>i</b>
<b>LIST OF TABLES</b>	<b>v</b>
<b>LIST OF FIGURES</b>	<b>vi</b>
<b>LIST OF ABBREVIATIONS</b>	<b>vii</b>
<b>LIST OF APPENDICES</b>	<b>viii</b>
<b>ABSTRACT</b>	<b>ix</b>
<b>ABSTRAK</b>	<b>x</b>
<b>CHAPTER 1 INTRODUCTION</b>	
1.1 Introduction	1
1.2 Objectives	2
<b>CHAPTER 2 LITERATURE REVIEW</b>	
2.1 The Origin of Birds	3
2.2 Taxonomy of Birds	4
2.3 Characteristics of Birds	5
2.4 Migration	6
2.5 The Importance of Birds	8
2.6 Threats	
2.6.1 Pollution	9
2.6.2 Predation	11
2.6.3 Climate Change	12
2.6.4 Disease	13
2.6.5 Agricultural Intensification	14

2.6.6	Habitat Destructions	14
2.6.7	Human Exploitation	15
2.7	Peninsular Malaysia and Its Birds	16
2.8	Migratory Birds to Peninsular Malaysia	17
2.9	Avifauna Researches in Peninsular Malaysia	18
2.10	Bird Conservation in Malaysia	19
2.10.1	Legal Protection	19
2.10.2	Organisations	20
2.10.3	The Birdlife International Important Bird Area (IBA) Programme	20
<b>CHAPTER 3    METHODOLOGY</b>		
3.1	Area of Study	21
3.1.1	Station One	21
3.1.2	Station Two	23
3.1.3	Station Three	23
3.1.4	Station Four	23
3.1.5	Station Five	24
3.2	Method	24
3.3	Time and Date of Observation	25
3.4	Field Guides	25
3.5	Data analysis	
3.5.1	Index of Sorensen	27
<b>CHAPTER 4    RESULTS</b>		
4.1	The overall results	28
4.2	Monthly Observation	32
4.3	Daily Observation	38
4.4	Bird species according to observation hour	38

4.5	Bird Species according to Stations	38
4.6	Bird Species according to Status, Occurrence and Law Protection	42
4.7	The New Species Accumulative Curve	45
4.8	Sorensen's Index of Similarity	48
<b>CHAPTER 5 DISCUSSION</b>		
5.1	The Adaptability of Common Birds observed	49
5.2	The Least Observed Birds in KUSTEM	51
5.3	Variation in number of species observed According to month	52
5.4	Daily observation	52
5.5	The effect of observation time	53
5.6	Habitats differences	53
5.7	Food Abundance	55
5.8	New Species Accumulative Curve	55
5.9	Migratory Birds	56
<b>CHAPTER 6 CONCLUSION</b>		58
<b>REFERENCES</b>		60
<b>APPENDICES</b>		64
<b>CURRICULUM VITAE</b>		73

## LIST OF TABLES

Table 4.1	List of least observed bird species in KUSTEM	34
Table 4.2	List of species observed only in certain months	37
Table 4.3	The Sorenson's Index of Similarity for five stations	48

## **LIST OF FIGURES**

Figure 3.1	Map of KUSTEM showing the five selected stations	22
Figure 3.2	Example of data sheet	26
Figure 4.1	The number and percentages of bird families observed according to Order	29
Figure 4.2	The number of bird species present in each different bird families	30
Figure 4.3	The ten most common bird species in KUSTEM according to number of data entries	31
Figure 4.4	The ten most common bird species in KUSTEM according to number of observation days	33
Figure 4.5	The total number of bird species observed in each month of observation	36
Figure 4.6	The number of species observed during observation according to day	39
Figure 4.7	The number of species occurred according to observation time	40
Figure 4.8	The number of species observed for each station in KUSTEM	41
Figure 4.9	The percentages of bird species in KUSTEM according to their status	43
Figure 4.10	The percentages of bird species in KUSTEM according to the incidence of occurrence	44
Figure 4.11	The percentages of bird species in KUSTEM according to protection by law in Peninsular Malaysia	46
Figure 4.12	The new species accumulative curve of KUSTEM birds	47

## **LIST OF ABBREVIATIONS**

DDT	Dichlorodiphenyltrichloroethane
KUSTEM	Kolej Universiti Sains dan Teknologi Malaysia
MNS	Malaysian Nature Society
PERHILITAN	Department of Wildlife and National Parks

## **LIST OF APPENDICES**

Appendix A	The figures of bird species observed in KUSTEM campus.	64
Appendix B	Glossary of Bird Names, Status, Occurrence and Protection of Wildlife Act 1972 for Bird Species Found in KUSTEM.	72
Appendix C	Species of birds observed in KUSTEM according to months.	75
Appendix D	The Oriental Dwarf Kingfisher ( <i>Ceyx eritachus</i> ) found in KUSTEM.	77

## **ABSTRACT**

An avian richness study had been carried out for six months in Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM), Terengganu, starting from July 2004 to December 2004. The main objective of this survey is to collect the data of birds' richness in KUSTEM. Direct observation method was used to conduct this study in five different sites. A total of 50 bird species representing 28 families of nine orders were recorded. *Alcedinidae* has the highest number of species observed, with five species. Five of the most common bird species observed include Asian Glossy Starling (*Aplonis payanensis*), Common Myna (*Acridotheres thistis*), Peaceful Dove (*Geopelia striata*), White-throated Kingfisher (*Halcyon smymensis*) and Yellow-vented Bulbul (*Pycnonotus goiavier*). August and October were the peaks for number of species observed with 30 species. For daily observation, the 16th day showed the highest species observed with 22 species. Meanwhile, the highest number of species was observed at 0710 and 0810 with 27 species respectively. Station One had the highest number of bird species, where 29 species were observed throughout the observation period. Forty species (82%) are categorized as resident and common birds. Thirty species (72%) of birds observed are Totally Protected by the Protection of Wildlife Act 1972. The high bird richness and composition in the study area may be due to several factors such as habitats, weather, food abundance, birds' behaviours and human activities.

# **TINJAUAN KE ATAS KEKAYAAN BURUNG DI KAMPUS KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI (KUSTEM)**

## **ABSTRAK**

Kajian ke atas kekayaan burung di kampus Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM), Terengganu, telah dijalankan bermula daripada Julai 2004 sehingga Disember 2004. Tujuan utama kajian ini adalah untuk mengumpulkan data kekayaan burung di kampus KUSTEM. Kaedah pemerhatian langsung digunakan di lima plot yang berlainan. Sejumlah 50 spesies burung daripada 28 famili dan sembilan order telah direkodkan. Famili *Alcedinidae* mempunyai jumlah spesies yang tertinggi, iaitu sebanyak lima spesies. Lima spesies burung yang paling biasa dijumpai termasuk Asian Glossy Starling (*Aplonis payanensis*), Common Myna (*Acridotheres thistis*), Peaceful Dove (*Geopelia striata*), White-throated Kingfisher (*Halcyon smymensis*) dan Yellow-vented Bulbul (*Pycnonotus goiavier*). Bulan Ogos dan Oktober mencatatkan jumlah spesies tertinggi yang dijumpai iaitu sebanyak 30 spesies. Bagi pemerhatian harian, hari ke-16 mencatatkan jumlah spesies tertinggi dijumpai iaitu 22 spesies. Sementara itu, jumlah tertinggi spesies dicatatkan pada pukul 0710 dan 0810 dengan masing-masing berjumlah 27 spesies. Stesen Satu mempunyai jumlah spesies tertinggi, iaitu sebanyak 29 spesies diperhatikan. Sebanyak 40 spesies (82%) merupakan burung tempatan dan burung yang biasa ditemui di negara ini. Manakala, 35 spesies (72%) pula adalah dilindungi oleh Akta Perlindungan Hidupan Liar 1972. Jumlah kekayaan dan komposisi burung yang tinggi di kawasan kajian adalah berkait rapat dengan beberapa faktor seperti jenis habitat, cuaca, kelimpahan makanan, kelakuan burung dan aktiviti manusia.