



UNIVERSITI PUTRA MALAYSIA

***HUMAN-MACAQUE CONFLICT BETWEEN TOURISTS AND
LONGLAILED MACAQUES IN KANCHING RECREATIONAL FOREST,
RAWANG, SELANGOR, MALAYSIA***

DIANA ROSE A. SADILI

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TAILED MACAQUES IN KANCHING RECREATIONAL FOREST,
RAWANG, SELANGOR, MALAYSIA**

By

DIANA ROSE A. SADILI

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of the Requirements for the Degree of Master of Science**

June 2016

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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June 2016

Chairman : Ahmad Bin Ismail, PhD
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Introduction: One of the most widespread primate groups in the world is the genus *Macaca*. The continuous overlap between macaques and humans has created complex conflicts which are brought by a variety of factors that may influence how macaques and humans interact. These include features of the location and history of interaction between people and macaques at a site. The interaction between humans and macaques may vary in response to the degree of overlap in physical space, macaque's hunger, thirst and or changes in season. Macaques' interaction with humans may also be more motivated based on prior experiences, surrounding, feeding, harassment and other forms of contact with humans.

Objective: The objective of the study is to assess the existing human-macaque conflicts and to identify the common factors that influence the conflicts between humans and macaques at Kanching Recreational Forest.

Methods: Tourists and long-tailed macaques' behaviour and activities were observed from 0800 hours to 1830 hours from February 2015 to July 2015 using scan and *ad libitum* sampling. The researcher conducted preliminary non-formal observations on October 2014. Survey questionnaires were used to gather information related to tourists' perceptions towards macaques; and target sampling was applied. Key informants were also interviewed (e.g. management staff) to fill the data gaps.

Result: The results from the Spearman's correlation analyses ($p < 0.05$) revealed that the number of tourist was associated with the appearances of long-tailed macaques- as the number of tourists increased, the number of macaques' appearances also increased. Although no incidence of biting was observed, there were 2,210 cases of snatching and 727 cases of aggression from the monkeys to the park tourists. Using two-sample Z-test, results also indicated that adult male macaques were the most aggressive group ($z = 0.077394$, $p < 0.05$). Provision of food was the main factor of conflicts.

Conclusion: Human-macaque conflicts were associated with factors such as increase of tourists; and the construction work around the park. Results also show that tourists' behaviour and activities towards macaques, and natural behaviour of macaques such as playfulness, aggression and attraction to food cause the conflicts. Furthermore, tourists' lesser direct contact with macaques and non provision of food decrease human-macaque interactions which will also more likely decrease the conflicts. Several suggestions for the management of macaques were made based on the results of this study. These suggestions include: information dissemination among tourists and park's management on macaques' behaviour and its potential risks to humans, enforcement of rules and regulations inside the park, control of food entry in the park and sterilization, capture or relocation of macaques.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

KONFLIK MANUSIA-KERA ANTARA PELANCONG DAN KERA EKOR PANJANG DI HUTAN REKREASI KANCHING

Oleh

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Pengenalan: Salah satu kumpulan mamalia terbesar di dunia adalah dari spesies *Macaca*. Pertindihan berterusan antara kera dan manusia telah mewujudkan konflik yang rumit yang dibawa oleh pelbagai faktor yang mungkin mempengaruhi cara kera dan manusia berinteraksi. Faktor-faktor tersebut termasuklah ciri-ciri penempatan dan sejarah interaksi antara manusia dan kera di sesebuah tempat. Interaksi antara manusia dan kera mungkin berbeza dari aspek reaksi terhadap tahap pertindihan ruang fizikal, kelaparan kera, kehausan dan atau perubahan musim. Interaksi kera dengan manusia juga mungkin didorong oleh pengalaman lepas, persekitaran, pemakanan, gangguan dan lain-lain bentuk hubungan dengan manusia.

Objektif: Kajian ini bertujuan untuk menilai kewujudan konflik antara manusia dan kera serta mengenalpasti faktor-faktor yang mempengaruhi konflik di antara manusia dan kera di kawasan Hutan Rekreasi Kanching.

Kaedah Kajian: Tabiat dan aktiviti antara pelancong dan kera berekor panjang telah diperhatikan bermula jam 8.00 pagi hingga 6.30 petang bermula pada bulan Februari 2015 sehingga Julai 2015 dengan menggunakan sampel imbasan dan *ad libitum*. Penyelidik menjalankan pemerhatian awal pada Oktober 2014. Borang kaji selidik telah digunakan untuk mengumpul maklumat berkaitan persepsi pelancong terhadap kera; dan sampel target telah diaplikasikan. Informan penting juga ditemubual (seperti kakitangan pengurusan) untuk memperkaya data.

Dapatan kajian: Dapatan daripada analisis korelasi Spearman ($p < 0.05$) menunjukkan bahawa bilangan pelancong adalah berkaitan dengan kemunculan kera berekor panjang – apabila bilangan pelancong meningkat, kemunculan kera juga semakin tinggi. Walaupun tiada insiden gigitan oleh kera berlaku semasa pemerhatian, terdapat 2,210 kes ragut dan 727 kes tindak balas agresif daripada monyet kepada pelancong. Menggunakan dua sampel Z-test, dapatan kajian turut menunjukkan kera jantan dewasa

adalah kumpulan yang paling agresif ($z=0.077394$, $p<0.05$). Pemberian makanan adalah faktor utama yang menyebabkan konflik berlaku.

Kesimpulan: Konflik manusia-kera adalah berkaitan dengan faktor-faktor seperti peningkatan jumlah pelancong; dan kerja-kerja pembinaan di sekitar taman tersebut. Dapatan kajian juga turut menunjukkan bahawa tingkah laku pelancong dan aktiviti terhadap kera serta sifat semulajadi kera seperti gemar bermain, agresif dan tarikan terhadap makanan juga adalah punca yang menyebabkan konflik berlaku. Selain itu, kurangnya pemberian makanan dan hubungan langsung antara pelancong dengan kera mengurangkan interaksi manusia-kera juga boleh mengurangkan berlakunya konflik. Beberapa cadangan tentang cara pengurusan kera telah dibuat berdasarkan dapatan kajian ini. Cadangan tersebut termasuklah: penyebaran maklumat dalam kalangan pelancong dan pihak pengurusan taman kera tentang tingkah laku kera dan risikonya kepada manusia, penguatkuasaan undang-undang dan peraturan dalam taman, mengawal kemasukan makanan ke dalam taman dan menjaga kebersihan, serta membuat penangkapan dan penempatan semula kera.

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The road to victory is not always that easy and to achieve one's dream is also a different kind of journey. There might be struggles, pains, bumps, tough turns and crashes, but one thing is sure - if it is your dream, you will push yourself and finish the race. This is the thing about pursuing a post graduate degree. It was never easy. It is like a love-and-hate relationship that is not being made strong by love itself but with commitment and passion. Graduate school can be tiresome and heartbreaking at times yet it is an exciting place to distinguish the people who will be with you all throughout the way.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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TABLE OF CONTENTS

	Page	
ABSTRACT	i	
ABSTRAK	iii	
ACKNOWLEDGEMENTS	v	
APPROVAL	vii	
DECLARATION	ix	
LIST OF TABLES	xiii	
LIST OF FIGURES	xvi	
LIST OF ABBREVIATIONS	xviii	
 CHAPTER		
1 INTRODUCTION		1
 2 LITERATURE REVIEW		4
2.1 Background on Human-Wildlife Conflict		4
2.2 Invasion of Human Settlements and Forest Fragmentations Impact on Macaque Populations in Southeast Asia		6
2.3 Understanding Nonhuman Primates' Social System and Behaviour		14
2.4 Human-Macaque Interactions in Southeast Asia		18
2.4.1 Macaques' Ecology and Behaviour Towards Humans		18
2.4.2 Human Activities, Beliefs and Behaviour Towards Macaques		21
2.5 Human-Macaque Conflict and Threats to Both Population		23
2.5.1 Impacts of Forest Fragmentation and Illegal Trade of Macaques		24
2.5.2 Agonistic and Pest Behaviour of Macaques		24
2.5.3 Macaques' Stealing and Littering		25
2.5.4 Macaques as Source of Pathogenic Diseases		25
2.5.5 Summary of Human-Macaque Interactions in India and Southeast Asian Countries		25
2.6 Current Status of Natural Resources and Macaque Population in Malaysia		26
 3 MATERIALS AND METHODS		28
3.1 Introduction		28
3.2 Operational Definition		28
3.3 Theoretical Framework		30
3.4 Conceptual Framework		33
3.5 Location of the Study Area		35
3.6 Methodology		37
3.6.1 Preparations and Materials for the Field Study		37
3.6.2 Method and Procedure		41
3.6.3 Sample		42
3.6.4 Approval		43
3.7 Survey Questionnaires		44
3.8 Key Informants Interview		44

3.9	Data Analysis	45
3.10	Summary	46
4	RESULTS AND DISCUSSION	47
4.1	Introduction	47
4.2	Site Description	47
4.3	Direct Observation on Macaques and Tourists Population	49
4.3.1	Observed Population of Macaques in Kanching Recreational Forest	49
4.3.2	Observed Population of Tourists in Kanching Recreational Forest	56
4.4	Occurrences of Agonistic Behaviour of Macaques	58
4.4.1	Agonistic Behaviour of Long-Tailed Macaques	58
4.4.2	Occurrences of Macaques' Agonistic Behaviours per Station	61
4.5	Assessment of Tourists' Activities in Kanching Recreational Forest	61
4.5.1	Tourists Activities Towards Macaques	61
4.5.2	Occurrences of Tourists' Activities Per Station	65
4.6	Human-Macaque Conflict Correlation Analysis	66
4.7	Association Between Tourists' Activities and the Appearances and Disturbances of Long-Tailed Macaques	73
4.8	Survey Questionnaire and Key Informants Interview	83
4.8.1	Profile of the Respondents	83
4.8.2	Perceptions and Awareness of Tourists towards Human-Macaque Conflict	85
4.8.3	Experiences and Attitudes of Tourists Towards Macaques	88
4.8.4	Recommendations from Tourists to Resolve Conflicts	95
4.8.5	Key Informants	97
5	SUMMARY, CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH	101
5.1	Summary and Conclusion	101
5.2	Recommendations for Future Research	104
	REFERENCES	106
	APPENDICES	116
	BIODATA OF STUDENT	145
	LIST OF PUBLICATIONS	147

LIST OF TABLES

Table	Page
2.1. List of Primate Species in Southeast Asian Countries	7
3.1. Observation schedule per station per day	37
3.2. Human-Macaque Activities Observation Table	38
3.3. Time Table of Activities for the Research Study	40
3.4. Weekly Observation Schedule per Month	42
3.5. Physical Characterization of Long-Tailed Macaques per Age-Sex Group	42
3.6. Guide Questions for Key Informants	45
4.1. Site Profile and Assessment Table	48
4.2. Average Number of Macaques Appeared Per Hour Per Day	50
4.3. Average number of macaques according to age-sex group per month	51
4.4. Average number of macaques observed per age-sex group according to weather condition	52
4.5. Comparison of the number of macaques according to gender using the combined population of adult and sub-adult macaques per hour per day	54
4.6. Comparison between population of adult male and adult female macaques per hour per day	54
4.7. Comparison between population of sub-adult male and female macaques per hour per day	55
4.8. Observed number of tourists per month	56
4.9. Characterization of long-tailed macaques' agonistic behaviour	58
4.10. Total number of observed macaques' aggressions per age-sex per month	59
4.11. Total number of observed macaques' snatchings per age-sex per month	59
4.12. Ranking of aggressiveness of macaques per age-sex group	60
4.13. Definition of human activities towards macaques	62

4.14. Activities of tourists per month	62
4.15. Average number of observed tourists' activities per hour	64
4.16. Overall ratio of all tourist and macaque interactions	66
4.17. Comparison between the number of macaques observed per age-sex group per time	67
4.18. Comparison between macaques' disturbances per gender per time	67
4.19. Comparison between macaques' disturbances per age-sex group per day	68
4.20. Correlation of the observed occurrences of aggression of macaques towards tourists between macaque age-sex groups	69
4.21. Correlation of the observed occurrences of snatching between macaque age-sex groups	69
4.22. Pairwise Spearman's Rank Correlation among human activities	70
4.23. Comparison between the activities of tourists towards macaques per time	70
4.24. Correlation between the number of tourists and tourists' activities	71
4.25. Correlation between the numbers of tourists and the number of macaques observed	72
4.26. Correlation between the number of tourists and macaques' disturbances	73
4.27. Correlation between tourists' feeding activities and the number of macaques observed	74
4.28. Correlation of tourists' feeding activities to macaques' disturbances	74
4.29. Correlation between playing or tricking with macaques and the number of macaques observed	75
4.30. Correlation between observed tourists playing or tricking macaques and macaques' disturbances	76
4.31. Correlation between tourists stoning macaques and the number of macaques observed	77
4.32. Correlation between tourists stoning macaques and macaques' disturbances	78

4.33. Correlation between the use of fire crackers by tourists and the number of macaques observed	79
4.34. Correlation between the use of fire crackers by tourists and macaques' disturbances	80
4.35. Correlation between tourists hitting macaques and the number of macaques observed	81
4.36. Correlation between tourists hitting macaques and macaques' disturbances	81
4.37. Likelihood ratio between all recorded human-macaque interactions and conflicts	82
4.38. Age-sex group of the respondents	83
4.39. Time of arrival of surveyed tourists	84
4.40. Comparison between the tourists' attitudes towards macaques and the age range often seen by tourists	88
4.41. Comparison between the gender of tourists and the conflicts experienced	90
4.42. Disturbances experienced and witnessed by tourists	91
4.43. Responses of tourists to macaques' disturbances	92
4.44. Types of food macaques stole from tourists	94
4.45. Types of drinks macaques stole from tourists	94
4.46. Types of gadgets macaques stole from tourists	95
4.47. Location of the Conflicts Experienced or Observed by Tourists	95
4.48. Recommendations obtained from the survey questionnaires	96
4.49. Summary of the data collected from the key informants	98
AD. Average number of age-sex groups of macaques per station per hour	135
AE. Occurrences of tourists' activities towards macaques per station	137
AF. Aggression and snatching committed by macaques per station	139
AG. Summary of Results of the Correlation Analyses	140

LIST OF FIGURES

Figure	Page
2.1. Wildlife Disturbance Complaints by Species in Year 2013	27
3.1. Theoretical Framework	31
3.2. Conceptual Framework	34
3.3. Map of the Study Area in Kanching Recreational Forest	36
3.4. Research Process Followed in Meeting the Objectives	46
4.1. Average Number of Appearances of Macaques Per Month	51
4.2. Number of Tourists from 2005-2012	56
4.3. Average Number of Tourists Per Hour Per Day	57
4.4. Comparison of the Average Number of Tourists and Macaques Per Hour Per Day	58
4.5. Percentage of Races Participated in the Survey	84
4.6. Awareness of Tourists on News About Macaques' Disturbances	85
4.7. Perceptions of Tourists on the Source of Occurrences of Conflicts	86
4.8. View of the Tourists on the Urgency to Resolve Human-Macaque Conflict	87
4.9. Attitude of Tourists Towards Long-Tailed Macaques	88
4.10. Percentage of Tourists Who Experienced Conflicts with Macaques	89
4.11. Percentage of Tourists Who Witnessed Disturbances of Macaques	91
C1. Dusky Leaf Monkey in Kanching	127
C2. White-thighed Leaf Monkey in Kanching	127
C3. Staff Cleaning the Main Park	128
C4. Information Board at Kanching Recreational Forest	128
C5. Tourists Swimming at the Third Waterfall	129
C6. Tourist Feeding a Macaque	129
C7. Tourists Playing with Macaques	130

C8. Tourists Hitting and Stoning Macaques	130
C9. Feeding of Juvenile Macaque	131
C10. Macaques Snatching and Littering of Food From the Trash Bins	131
C11. Adult Male Macaque Snatched Food from Tourists	132
C12. Macaque Snatched Bottled Flavoured Drink from Tourists	132
C13. Display of Aggression of Sub-adult Long-tailed Macaque	133
C14. Macaques' Sexual Intercourse	133
C15. Macaques' grooming activities	134
C16. Interview of Key Informant	134

LIST OF ABBREVIATIONS

IUCN	International Union for Conservation of Nature World Parks Congress
HWC	Human-wildlife conflict
FAO	Food and Agriculture Organization of the United Nations
WWF	World Wildlife Fund for Nature
CR	Critically Endangered
EN	Endangered
LC	Least Concerned
VU	Vulnerable
NT	Near Threatened
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
BTNR	Bukit Timah Nature Reserves
CCNR	Central Catchment Nature Reserves

CHAPTER I

INTRODUCTION

1.1 Background

Our Earth has vast and rich natural resources that have met the needs of its inhabitants for millennia. However, through the years Earth has been exploited by increasing human population to support and satisfy human needs and wants. Nowadays, different human activities such as quarrying, mining, illegal logging, urbanization and developments in road systems cause the shrinking of the natural ecosystem. With a dramatic increase in population in the last century, humanity faces problems on reduced sources of food, water and other necessary requirements for survival. As a consequence of these activities, the pressure on the remaining natural resources continues to increase, and the number of species and resources decrease.

One of the remarkable causes of the alteration in the environment has been caused by the occurrences of urban sprawl. One of the drivers of urban sprawl is forest fragmentation (Federation of Ontario Naturalists, 2014). Forest fragmentation occurs when large, continuous forests are divided into smaller blocks by roads, agriculture, urbanization or other development. This process reduces the forest's function as habitat and source of food for many plant and animal species. Some of the consequences of forest fragmentation are: reduction of total habitat area, isolation of population and vulnerability to external competition and predation (Federation of Ontario Naturalists, 2014).

Although ecotourism along with conservation programs are put in place to conserve the natural resources, occurrences of conflicts between humanity and wildlife are still evident. An example of this trend is the human-macaque conflict that may have originated because of the severe ecological changes as well as the behaviour and ecology of macaques and human interactions with the species. According to Ankel-Simons (2000), apart from humans, macaques are the most widespread genus. Thus, there is a higher possibility of human-macaque interactions.

The way in which macaques and humans interact may be greatly influenced by many different factors such as the location and the history of interaction between people and macaques at a specific site. Furthermore, human-macaque interaction may vary in terms of response to the degree of overlap in physical space; macaque's hunger, thirst and or changes in season. Macaques' interaction with humans may also be influenced by prior experiences, surrounding, feeding, harassment and other forms of contact with humans (Sha et al., 2009).

Different cases of human-macaque conflict have been prevalent in different countries especially in North-eastern Africa and a number of island and continental areas in Southern and Eastern Asia where there is an extensive population of macaques (Kanthaswamy et al., 2008). The human-macaque conflict has been caused by continuous anthropogenic habitat alteration which brings closer proximity between humans and macaques with an attempt to exploit common features in altered environment (Mittermeier et al., 2009). Human-macaque conflicts can also result from human activities and macaques' ecology and behaviour (El Alami et al., 2012). In this regard, the study was carried out to assess the occurrences of human-macaque conflicts, identify the possible factors that cause the conflicts between humans and macaques, and provide research data based recommendations and/or solutions to resolve the humans and macaques conflicts.

1.2 Problem Statement

Human-wildlife conflict is becoming more and more complex. According to the International Union for Conservation of Nature World Parks Congress (IUCN), human-wildlife conflict (HWC) occurs when wildlife requirements overlap with those of human populations, creating costs for both to residents and wild animals (Lamarque et al., 2009). One of the human-wildlife conflicts known is the human-macaque conflict. Due to macaques extensive population growth, continuous alteration of the environment and overlap on space and resources between human and macaque, there are occurrences of conflicts.

Currently, Kanching Recreational Forest is under the supervision of Tourism Selangor Sdn. Bhd. However, the forest has been fragmented because of the on-going nearby construction developments and road works. With this, macaques and other wildlife species are being disturbed. Further, since it is a recreational area, the numbers of tourists as well as their activities inside the site are not being supervised or controlled.

In addition, the number of macaques in the site is not being monitored nor managed. According to the Forest management, there are no current or future programs for the macaques that inhabit the forest area. Consequently, there are reports of continuous disturbances and agonistic interactions between tourists and macaques. Thus, the need for implementing effective and efficient policies and programs, developing a team of highly experienced and knowledgeable people or organizations to monitor and control macaque behaviours could help implement the programs and strategies better.

Therefore, this study intended to identify possible and effective ways to resolve the conflicts between humans and macaques in relation to the factors that influence both of the population. The study also aimed to explore options for resolving the conflict without causing risks to humans macaques. The research also sought to identify the challenges and opportunities present in the site which are relevant to the resolution of conflict between humans and macaques. Further, the study intended to describe the

interaction of both population as well as the subsequent behaviours that may affect their social interaction.

1.3 General Objective

The main objective of the study was to assess the existing human-macaque conflicts and to identify the common factors that influence the human-macaque conflicts at Kanching Recreational Forest.

1.4 Specific Objectives

Specifically, the study aimed to assess:

- 1) the population of long-tailed macaques in Kanching Recreational Forest;
- 2) the attitudes and behaviour of long-tailed macaques during interaction;
- 3) the activities and attitudes of tourists towards macaques in the study area;
- 4) the perceptions and attitudes of tourists on long-tailed macaques based on their personal experiences and observations.

1.5 Significance of the Study

This study is of significance, especially to the management and humans with closer proximity to macaques, for mitigating the existing human-macaque conflicts. The study is designed to identify the factors that influence the conflict between humans and macaques and further avoid the existence of such conflicts. The results of the study can help the management to formulate effective programs and policies not just for macaques but also for the conservation of the natural resources and other wildlife species. For the tourists and residents near the site, the results of the study can contribute to the minimization of danger and annoyance of macaques in their activities.

Local government agencies will also benefit from the results and the suggested strategies that they may apply. The study can be used as baseline information for future programs and policies. Furthermore, the results from this study will enable the local government to strengthen their capacity in mobilization and improvement of programs and policies on the site. The identification and record of the will help identify how the macaques move from one place to another and which age group is more active. The study is also significant for national level government because the findings of this study will provide a gist of the current status of human-macaque conflict in Malaysia. Also, the study will help to reinforce existing local and national programs and policies. Furthermore, since there is limited information on the macaque population and records of human-macaque conflicts in Kanching Recreational Forest, the study will provide up-to-date information, population status of macaques and occurrences of human-macaque interaction in the area. Different institutions, organizations and research institutes can use this as a valuable addition to relevant information sources.

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