

MALIAU BASIN

PHYSICAL ENVIRONMENT AND BIOLOGICAL DIVERSITY OF THE NORTHERN RIMS



Editors

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Mammals of Eucalyptus Camp, Maliau Basin

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Abstract : Mammal diversity and distribution at Eucalyptus Camp, Maliau Basin, was studied during the scientific expedition held on 19-25 June 2006. Mammal in this study is divided in three groups; large mammals, small mammal and bats. Small mammal trapping was carried out along four major study trails using cage traps with a total trapping efforts of 600 trap/nights. All the traps were laid at 10–15 m intervals, baited alternately either with banana, roasted coconut, and oil palm seeds. For bats, trapping was conducted randomly along the study trails using mist-nets with a total netting efforts of 60 net/nights and harp traps with a total trapping efforts of 12 trap/nights. The nets and traps were serviced twice, between 6–9 pm and between 6–9 am. Individuals captured were examined for species identification, and released at the point of capture. Field night and day surveys were also conducted opportunistically along the major study trails especially to look for signs of large mammals. Any species observed (naked eyes, binocular or spotting scope) were identified and noted. The data gathered were used to generate mammal species lists. Mammals are less diverse possibly due to the location of study site at around 1000 m elevation. Eight bat species were caught representing 4 families; one fruit bat and 7 insectivorous bat species. Two of the bat species are endemic to Borneo. For small and large terrestrial mammals, only 7 species were identified; four small and three large mammals.

Introduction

The Maliau Basin is known to many scientists as Sabah's lost world. It is isolated from other areas due to its rugged topography and located above 1000m elevation. Lack of accessibility and logistic make it difficult for researcher to conduct study within this area. However, a special research arrangement was made and a scientific expedition was held between 19-25 June 2009 to document the diversity and distribution of terrestrial flora and fauna, primarily at the unexplored areas around Eucalyptus Camp. These data are considered crucial especially for the formulation of conservation management of Maliau Conservation Area.

Materials and methods

This study was conducted between 19-25 June 2006 at the Eucalyptus Camp within the heath forest of Maliau Basin at about 900-1000 m elevation. In this study, mammal is divided in three distinct groups; large mammal and terrestrial and flying (bats) small mammals. The methods of studying diversity and distribution of these mammal groups are as follows;

Large Mammals – Field surveys were conducted at least for 5 nights and days along the trails and major streams. Any individual species observed (naked eyes, binocular or spotting scope) in these surveys were identified and noted. Mammals also were identified through footprints, feeding, droppings, and calls. Each of the location of animal or marking found during surveys was noted. One cave also was inspected for any signs of bat, birds and large mammals.

Small Mammals - Trappings were made mostly along established trails using over 100 traps laid (on the ground and trees up to 2 m above ground) at 10-15 m intervals. Traps were baited alternately either with banana, roasted coconut meat, or jackfruit. Traps were serviced twice a day, morning and evening and left open for 5 continuous days and nights. The total trapping efforts was 600 trap/nights. Each trapped small mammals were examined for species identification, and released at the point of capture. Small mammals observed during the field surveys also identified and noted on the checklist.

Bats - Field trapping is required using Harp Traps and mist-nets. Nettings were made randomly along the established trails using 20 mist nets that were set at about 1.5 to 2 m above ground for 3 consecutive nights. The nets were serviced twice, in the evening between 6-9 pm and in the morning between 6-9 am. Other than nets, 3 Harps Traps also were used for 4 consecutive nights to catch insect bats. Bats captured were examined for species identification (based on Payne et al., 1985) and released at the point of captured.

Results and discussion

Borneo supports one of the richest mammal faunas on earth with so far approximately 221 native species have been recorded on this island. Out of these, 160 species from 29 families have been found in Sabah (Payne et al., 1985). In Maliau Basin however, the total number of mammal species was reported as 82 species which include clouded leopard, and malayan sun bear (Anon., 2008). The list mammal species however is not provided in the report. One of the assumptions is that the list may include all the species inhabiting areas surrounding the basin from the lowland up to the rim. The mammal species reported inhabiting the fringes of the Conservation Area are banting (tembadau) and the elusive bay cat, asian elephant, orang utan (Gasis et al., 1998).

From the literature and interviews with Sabah Foundation staff in Maliau Basin so far only two known studies were conducted; in 1988 within dipterocarp forest habitat along the Maliau River (Marsh, 1989) and 1996 in heath forest at southeastern end of the basin (Gasis et al., 1998). Both studies were conducted within heath forest of the basin. The summary list of mammal species recorded from the heath forest of the basin is in Table 1, 2 and 3. Description of each of the mammal groups are as follows;

Large Mammals

Only five large mammal species were recorded from this study where most of the species have been reported during earlier surveys (Table 1). Most of the ungulates were recorded at the lower boundary of the heath forest and mostly reported during 1988 study survey. Gibbons can be considered common in the area where calls can be heard every morning coming from the southeastern part of the base camp. Up to now, cumulative number of large mammal species reported from heath forest of Maliau Basin based on these three surveys is 11 species.

Table 1. List of large mammal species recorded in 1988, 1996 and recent survey in Heath Forest of Maliau Basin, Sabah.

Mammal Species	Survey		
	1988	1996	Recent
<i>Presbytis rubicunda</i> (Red Leaf Monkey)		√	
<i>Hylobates muelleri</i> (Borenan Gibbon)		√	√
<i>Pongo pygmaeus</i> (Orang-Utan)		√	
<i>Sus barbatus</i> (Bearded Pig)		√	√
<i>Tragulus javanicus</i> (Mouse Deer)		√	√
<i>Dicerorhinus sumatrensis</i> (Sumatran Rhinoceros)	√		
<i>Cervus unicolour</i> (Sambar Deer)	√	√	
<i>Bos javanicus</i> (Tembadau)	√		
<i>Elephas maximus</i> (Elephant)	√	√	
<i>Helarctos malayanus</i> (SunBear)	√		√
<i>Muntiacus muntjac</i> (Barking Deer)			√
Total Species	5	7	5

Small Mammals

Recent survey only captured three (3) species of small mammals compared to 4 species during the last two surveys. *Leopoldamys sabanus* was not reported in previous survey but *Niviventer rapit* and *Tupaia tana* were not reported in this survey. General summary of the small mammals trapping results is in Table 3. Note that the trapping site in the recent study is located at slightly higher elevation. Up to now, cumulative number of terrestrial small mammal species reported from heath forest of Maliau Basin based on these three surveys is 5 species.

Table 2. List of terrestrial small mammal species recorded in 1988, 1996 and recent survey in Heath Forest of Maliau Basin, Sabah.

Mammal Species	Survey		
	1988	1996	Recent
<i>Tupaia tana</i> (Large Treeshrew)	√	√	
<i>Tupaia Montana</i> (Mountain Treeshrew)	√	√	√
<i>Niviventer rapit</i> (Long-tailed Mountain Rat)	√	√	
<i>Maxomys whiteheadi</i> (Whitehead's Rat)	√	√	√
<i>Leopoldamys sabanus</i> (Long-tailed Giant Rat)			√
Total Species	4	4	3

Table 3. Summary of small mammal trapping results from 1988, 1996 and recent survey f

Study Period	Study Effort	Abundance	Individuals	Species
1988	251 trap/nights	800-900	6	3
1996	480 trap/nights	less 700	11	4
2006	600 trap/nights	900-1000	7	3

Bats

Bat study was not done in the earlier two studies. In the recent study trapping and netting captured 8 species of bat from 4 families. Out of these 8 species, 1 species is fruit bat and 7 are insectivorous bats. Two of the species (*Rhinolophus borneensis* and *Rhinolophus creaghi*) as indicated in Table 4 are endemic to Borneo and one species was found in one cave located at the study site. All eight bat species recorded from this survey are new record for Maliau Basin since no record of bat study has been conducted at the area.

Table 4. List of bat species captured in recent survey in Heath Forest of Maliau Basin, Sabah.

Family	Scientific name	Common name	IUCN
HIPPOSIDERIDAE	<i>Hipposideros diadema</i>	Diadem Roundleaf Bat	LR:lc
	<i>Hipposideros cervinus</i>	Fawn Roundleaf Bat	LR:lc
	<i>Hipposideros bicolor</i>	Bicolored Roundleaf Bat	LR:lc
PTEROPODIDA	<i>Aethalops alecto</i>	Grey Fruit Bat	Id, LR, nt
RHINOLOPHIDAE	<i>Rhinolophus sedulus</i>	Lesser Woolly Horseshoe Bat	LR: lc
	<i>Rhinolophus borneensis</i>	Bornean Horseshoe Bat	LR: lc
	<i>Rhinolophus creaghi</i>	Creagh's Horseshoe Bat	LR: nt
VESPERTILIONIDAE	<i>Kerivoula intermedia</i>	Small Wolly Bat	LR, nt, Ed

LR= Low risk, nt = Not threatened, lc = least concern

General Diversity and Distribution

Although at least three studies were conducted in heath forest of Maliau Basin, data indicated that more works needed to be done to capture a true representation of mammal community of Eucalyptus Camp. So far a total of 24 mammal species have been recorded within the heath forest of Maliau Basin. However, a relatively low number of mammal species may be a true diversity and distribution pattern of mammals at higher altitude of Maliau Basin. Generally more mammal species are found at the lowland forest compared to highland forest, although small mammal have been reported high in diversity at mid elevation between 2600 until 3200 m (Shukor, 2008). Ungulates and primates especially of the larger species rarely exceed the range above 1000 m elevation and the highest peak within the basin is at about 1900 m. Limited distribution of mammals may be related to the topography, climate and habitat of the study area.

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