

THE SMALL MAMMALS OF BARIO, KELABIT HIGHLANDS SARAWAK

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ABSTRACT

*The aim of the study was to find the composition of the small mammals in the forests of Bario. Two study sites were chosen; the salt well near Pa' Ukat and the area down stream of the new reservoir near Kampong Arudalan. Rodents and bats were captured using live traps and mist nets respectively. A total of 42 animals was captured comprising of 7 species of small mammals, five were bats and two were rodents. The commonest mammal was *Cynopterus brachyotis*.*

INTRODUCTION

Collection of mammals in Bario and its vicinity was carried out by Tom Harrisson between September 1945 and December 1949, while carrying out his duties as a military officer (Davis, 1958). Tom Harrisson managed to collect 202 specimens representing 51 species. According to Davis (1958), Tom Harrisson reported that bearded pig (*Sus barbatus*) were seasonally abundant and served as a constant source of meat for the Kelabits. Temadau (*Bos sondaicus*) was also reported to be wandering occasionally from grasslands about 50 miles in the headwaters of the Bahau River.

Prior to Tom Harrisson's collection, Davis (1958) mentioned that two persons by the name of Lonnberg and Mjoberg reported 12 species of mammals were collected. From the previous reports and records, one can infer that the population of wildlife in Bario was quite high.

The purpose of this study was to determine the composition of the small mammal species in Bario and to compare the number of species found in the two locations studied. The study also aimed at comparing the information gathered during this study and others previously carried out in Bario.

STUDY AREAS

Two sites were selected for this study. The first study site was at the salt well near Pa' Ukat. The area consists of kerangas and secondary forest with pockets of bamboo clumps. The altitude was about 1,100m asl. A small stream runs close to the salt well. Salt is still being processed here but no salt processing was carried out during the study period. The small mammal traps were placed along the small streams and bat mist nets were deployed randomly in the forest areas. Small mammal trapping and bat mist netting were carried out around this area from 12-15 April 1995.

The second trapping site was downstream of the new reservoir near Kampong Arudalan at an altitude of 1,250m asl. The habitat of this study area was a primary sub-montane forest. The forest has been subjected to some disturbances because the trail to the reservoir pass through the study area. On the western side of the river, an open ground believed to be abandoned rice field has been turned into cattle and buffalo grazing ground. Small mammal traps were placed on both sides of the existing trail along the river. Bat mist netting was carried out at areas deeper into the forest. Small mammal trapping and bats mist netting were carried out around this area from 17-19 April 1995.

MATERIALS AND METHODS

Field methods of recording the small mammal species belonging to the order of Rodentia, Scandentia and Insectivora were by capturing them using live traps. Fifty collapsible cage traps measuring 29x22x50cm were deployed to capture the small mammals. The traps were placed on both sides along the existing trails about 20 meters apart. Ripe banana and sweet potatoes were used as baits. The traps were checked at 1000 hours every morning during the study period. The successful traps were replaced with fresh bait placed at the same location after the animal was removed. By doing this, the total number of traps deployed were maintained at 50 at all times during the study. Morphological measurements were taken from the animal such as total length, tail length, ear length, hind foot (tarsus) length, fore arm length, weight and sex. The number of trap nights generated for small mammals at the first trapping site was 250 and the second trapping site was 150.

The animals were identified based on Payne et al (1985), Mohamad Momin Khan (1992) and Medway (1983). The specimens collected were euthanized and kept as round skin specimens at UNIMAS museum.

As for chiroptera, mist nets were deployed during the study period. Five 12 metre nets with four shelves were deployed. The mist nets were placed across flight paths in both study areas. The mist nets were opened at 0500hrs and closed at 0600hrs every morning and again opened at 1830hrs and closed at 1930hrs every evening during the study period. The number of trapping units for the first study area was 40 and the second study area was 20. One trapping unit is equal to one 12m mist net open for one hour.

Bats caught were identified using Payne et al (1985), Mohamad Momin Khan (1992) and Medway (1983). Their sex were noted. Measurements of their body, tail (if present), ear, forearm and weight were taken. The specimens collected were killed and preserved wet in 70% alcohol which later were brought back to UNIMAS museum.

RESULTS AND DISCUSSION

A total of 42 animals were captured during the study period comprising of seven species (Table 1). Twenty-seven animals comprising five species were caught at the first study site and 15

animals comprising of three species were caught at the second study site. Of the total species, five were bats and only two were rodents.

For Rodentia, the two animals, *Tupaia glis* and *Rattus tiomanicus*, were caught at the first study site. No rodents were caught at the second study site. The percentage of trap success was 0.5% for rodents. On the other hand, an encouraging result of 73.3% trap success was achieved for bats. No bats were caught on 16 April 1995 because that was the day the team moved from the first site to the second site (Table 2).

Tables 1 : List and number of small mammal captured according to study sites, Bario

Common Name	Scientific Name	No.	Site
Grey fruit bat	<i>Aethalops alecto</i>	3	Reservoir
Spotted-winged fruit bat	<i>Balionycteris maculata</i>	1	Salt Lake
Short-nosed fruit bat	<i>Cynopterus brachyotis</i>	23	Salt Lake
Short-nosed fruit bat	<i>Cynopterus brachyotis</i>	11	Reservoir
Short-nosed fruit bat	<i>Megaerops ecaudatus</i>	1	Reservoir
Tailless fruit bat	<i>Pipistrellus tenuis?</i>	1	Salt Lake
Least pipistrelle	<i>Rattus tiomanicus</i>	1	Salt Lake
Malaysian field rat	<i>Tupaia glis</i>	1	Salt Lake
Common tree shrew		42	
Total			

Table 2. List of bats netted near salt wake and reservoir, Bario

Species	Date (April 1995)							Total
	12	13	14	15	16	17	18	
<i>Cynopterus brachyotis</i>	3	15	4	1	-	11	-	34
<i>Pipistrellus tenuis?</i>	-	1	-	-	-	-	-	1
<i>Balionycteris brachyotis</i>	-	-	-	1	-	-	-	1
<i>Aethalops alecto</i>	-	-	-	-	-	1	2	3
<i>Megaerops ecaudatus</i>	-	-	-	-	-	1	-	1
Total	3	16	4	2	-	13	2	40

Among the species caught, *Cynopterus brachyotis* was the commonest (34 animals). Of the 34 *C. brachyotis* captured during the study period, 23 were caught at the first study site and 11 were from the second site (Table 1). The *C. brachyotis* amounts to 84% of the total catch of bats in Bario. Davis (1958) described this species based on one female caught in old secondary forest at Pa' Mada (1,200m asl). Mickleburgh et al (1992) described in the Action Plan of this species as the most common mammals of the lowlands and hills of Borneo. It occurs in most habitats including lower montane forest, dipterocarp forest, garden, mangrove and strand vegetation.

It is noteworthy to mention that Least pipistrelle (*Pipistrellus tenuis*), whose identification has yet to be confirmed, was captured on 13 April 1995 at the salt well. Payne et al (1985) describes

this species based on two specimens from Sabah. The morphological measurements are as follows: total length: 80.64mm, tail length: 32.30mm, ear: 9.50mm, weight: 5.0g, and sex: male.

Compared to Davis (1958) who worked on 202 museum specimens representing 51 species collected between 1945 and 1949, our survey which covered a short duration of seven days and therefore could expect to find less number of species; only 42 specimens representing seven species were captured. The occurrence of rain in the evening since our arrival and major habitat changes since 1945 could also influence our results.

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