

## Species Composition of Small Mammals at the Ayer Hitam Forest Reserve, Puchong, Selangor

MOHAMED ZAKARIA, SUNDAI SILANG and RAHIM MUDIN

*Faculty of Forestry,  
Universiti Putra Malaysia,  
43400 UPM Serdang, Selangor, Malaysia*

**Keywords:** Small mammals, species composition, species abundance, Rodentia, logged forest, hunting

### ABSTRAK

Satu kajian tentang komposisi dan kelimpahan mamalia kecil telah dijalankan di Hutan Simpan Ayer Hitam (HSAH), Puchong, Selangor. Sejumlah 1120 jam pemerangkapan merekodkan sebanyak 14 spesies mamalia kecil dari 11 genus dalam lima famili dan tiga order. Takson-takson tersebut terdiri dari enam tikus, empat tupai, tiga insektivora dan satu primat. Sejumlah 32 individu mamalia kecil telah ditangkap. Daripada jumlah ini, 17 individu atau 53% adalah tikus, 9 individu (28%) adalah tupai, 4 individu (13%) tupai muncong dan setiap satu individu (3%) bagi kedua-dua primat dan gimnour. Order Rodentia (tikus dan tupai) merupakan kumpulan utama mamalia kecil di kawasan ini dengan jumlah tangkapan sebanyak 82% atau 26 individu.

### ABSTRACT

A study on the species composition and abundance of small mammals was carried out in Ayer Hitam Forest Reserve (AHFR), Puchong, Selangor. A total of 1120 trapping-hours recorded 14 species of small mammals which belonged to 11 genera from five families and three orders. The taxa comprised of six murids, four sciurids, three insectivores and one primate. A total of 32 individuals of small mammals were captured. From this, 17 individuals or 53% were rats, 9 individuals (28%) were squirrels, 4 individuals tree shrews (13%) and 1 individual each (3%) for both primate and gymnures. The order Rodentia (rats and squirrels) was the main group of small mammals in the area, with a total capture of 82% or 26 individuals.

### INTRODUCTION

Studies of small mammals are among the least favoured subject amongst the zoologists or wildlife ecologists (Louis *et al.* 1988). In Malaysia, studies on small mammals include those of Harrison (1968), Lim *et al.* (1977), Louis *et al.* (1988), Azmin *et al.* (1988) and Shabrina *et al.* (1988) in various secondary forest in the state of Selangor.

The alarming rate of exploitation of forested land in Ayer Hitam Forest Reserve (AHFR) has severely depleted the habitats of many wild animals (Zakaria and Mudim 1999, Zakaria and Topani 1999). Being rapidly developed, it is important to study and document the distribution of small mammals in the forest. It will also complement the existing database on animals for Ayer Hitam Forest Reserve. This study was

undertaken to determine the species composition and abundance of small mammals (except bats) in the area.

### MATERIALS AND METHODS

This study was conducted during the expedition from 3-8 September 2000. Live trapping method was used to collect the data on small mammals. Small mammals considered in this study were those weighing less than 5kg. Trapping for small mammals especially rodents and other terrestrial mammals, with the exception of bats were carried out by using wire-cage (similar to rat-trap) with a baited hook release. Forty live traps measuring 30×15×15 cm were used and placed randomly in the forest. Various types of baits such as banana, papaya, coconut kernel, sweet potato, dried fish and anchovies or a combination of

these baits were used in the study. Banana was used most because it was found to be the most suitable bait for small mammal trapping (Azmin 1995). The types of baits used were very important because it could affect the types and number of animals captured. Lim (1973) noted that careful selection of baits could increase the number of animals caught in relation to the type of habitats sampled. The placement of traps was not strictly on the ground (Labang and Medway 1978) and a few traps were set on recumbent logs or dead trees, on a stump or on reachable higher branch of trees. All traps were left open throughout the day and night. A daily checking between 9.00 am and 10.00 am the following day was conducted. In each trapping session, traps were deployed for a period of 96 hours or approximately four days (Labang and Medway 1978). Every captured animal was

identified to species level and euthanized by chloroform before the measurements on weight and length were carried out. All animals captured were marked on the left ear with red paint for identification and were released back in the area where they were caught.

## RESULTS AND DISCUSSION

A total of 14 species from 11 genera of small mammals (excluding bats) were identified from 1120 trapping hours (Table 1). All species belonged to five families from three main orders. Of these, six species were murids, four sciurids, three insectivores and one primate. The six murids caught comprised of five forest rats and two commensal rats. The four sciurids captured were tree and ground squirrels while the insectivores were treeshrews and gymnures. The slow loris was the only primate caught.

TABLE 1  
Small mammals captured in Ayer Hitam Forest Reserve

Species	Common Name	Number of Catch	Percentage
<b>Order: Rodentia</b>			
1. <b>Family Muridae</b>	Rats	17	53%
1. <i>Leopoldamys sabanus</i>	Long-tailed giant rat	2	
2. <i>Maxomys surifer</i>	Red spiny rat	7	
3. <i>Mus castaneus</i>	House mouse	2	
4. <i>Pithecheir parvus</i>	Monkey-footed rat	1	
5. <i>Rattus rattus</i>	House rat	1	
6. <i>Rattus tiomanicus</i>	Malaysian wood rat	4	
2. <b>Family Sciuridae</b>	Squirrels	9	28%
1. <i>Callosciurus nigrovittatus</i>	Black-banded squirrel	1	
2. <i>Callosciurus notatus</i>	Plantain squirrel	6	
3. <i>Lariscus insignis</i>	Three-striped ground squirrel	1	
4. <i>Sundasciurus tenuis</i>	Slender squirrel	1	
<b>Order Insectivore</b>			
1. <b>Family Tupaiidae</b>	Tree Shrews	4	13%
1. <i>Tupaia glis</i>	Common tree shrew	3	
2. <i>Tupaia minor</i>	Lesser tree shrew	1	
2. <b>Family Erinaceidae</b>	Gymnures	1	3%
1. <i>Echinosorex gymnurus</i>	Moonrat	1	
<b>Order Primate</b>			
2. <b>Family Lorisidae</b>	Primate	1	3%
1. <i>Nycticebus coucang</i>	Slow loris	1	
<b>Order:</b>			
Rodentia	Rats and Squirrels	26	82%
Insectivore	Tree shrews and Gymnures	5	15%
Primate	Loris	1	3%
<b>Total No. of Individuals</b>		<b>32</b>	<b>100%</b>



Most of the captured mammals were common lowland forest species. By comparing the results with the study of Abdullah (1998) in same area, all the species recorded were similar to those found in the present study except for slow loris (*Nycticebus coucang*) and moonrat (*Echinosorex gymnurus*). The absence of the two latter species in Abdullah (1998) could be due to the study being conducted only in the interior forest; both the species in this present study were caught near the forest edge. The capture of slow loris was a big surprise because the species is considered rare and seldom seen. Furthermore, this species is normally an arboreal species which spends most of its time on trees.

AHFR recorded more species of small mammals than Pasoh Forest Reserve, Negeri Sembilan (Kemper 1988). Based on a six-month study conducted in Pasoh Forest Reserve, only 11 species of small mammals (excluding bats) were obtained compared to 14 species caught in this expedition. AHFR is probably more diverse in terms of number of species of small mammals than Pasoh. Another study by Louis *et al.* (1988) recorded at least 21 species of small mammals (excluding bats) which included a few species of flying squirrels in AHFR. A study by Lim *et al.* (1977) in Bukit Lanjan Forest Reserve, Sg. Buloh, Selangor recorded a total of 51 species of small mammals (excluding bats) during a period of five years of intensive data collection. These species belonged to 16 families from 6 orders of terrestrial mammals listed by Medway (1983). A higher collection obtained by Lim *et al.* (1977) could be due to the different duration of study undertaken and that Bukit Lanjan Forest Reserve is less disturbed than AHFR.

A total of 32 individuals of small mammals were captured in the study area. The Rodentia (rats and squirrels) was the most abundant order of small mammals captured. Almost 82% of the number of individuals captured fall in this order. A similar result was obtained by Abdullah (1998), Louis *et al.* (1988) and Lim *et al.* (1977). The rats were the most abundant species comprising 53% or 17 individuals (Table 1 followed by squirrels 28% (9 individuals). The least number of individuals captured were insectivores and primate with 14% (5 individuals) and 3% (1 individual) respectively. *Maxomys surifer*, *Callosciurus notatus*, *Rattus tiomanicus* and *Tupaia glis* were among the most commonly captured species in the area.

The study shows that there was no dominant species found in the area. However, *M. surifer* (Red spiny rat) and *C. notatus* (Plantain squirrel) were more common than other species. The total number of individuals captured was seven and six respectively. A study by Hasnan (1999) also found that *C. notatus* were observed for 55% of the total number of observations made in AHFR. The high abundance of *M. surifer* and *C. notatus* in the area were probably related to their good adaptation in the disturbed forest habitats. Potential food sources for them in the area are easily available (Zakaria and Mudim 1999, Zakaria and Topani 1999).

According to Delany (1974) the rodents were able to consume many types of food such as plants, fruits and seeds without causing any negative effects to them. The existing Orang Asli settlement in the area may also be responsible for the high number of rodents (Zakaria and Topani 1999). Louis *et al.* (1988) had captured at least 13 species of rodents around the Orang Asli village during his study. Left over food and rubbish dumped by the villagers might have attracted these small mammals (Audy 1948).

## CONCLUSION

This study has shown that the forest is still rich in small mammal species, although not all small mammal groups were sampled. Many of the small mammal species have adapted to the forest since it was logged 30 years ago. The distribution and abundance of food resources and other factors such as the availability of suitable habitats (e.g. cover) could also be the factors that determine the species composition, distribution and abundance in the area (Zakaria and Nordin 1998). Therefore, it is recommended that any future development planned within the AHFR should take into consideration the habitat of wildlife populations. Any drastic change in the area will alter the wildlife habitats and eventually affect the existence of wildlife species.

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