



Comparative Distribution of Small Mammals Diversity in Protected and Non-Protected Area of Peninsular Malaysia

Authors:

Julius William-Dee*, Faisal Ali Anwarali Khan, Qhairil Rosli, Muhd Amsyari Morni, Isham Azhar, Lee Sim Lim, Roberta Chaya Tawie Tingga and Mohd Ridwan Abdul Rahman

*Correspondence: juliuswill14@gmail.com

DOI: <https://doi.org/10.21315/tlsr2019.30.2.10>

Highlights

- An individual of *Bandicota indica* was recorded at Wang Kelian SP and is the first record for this site. This finding of this species in a primary forest shows the extension of its range.
- A single individual of *Crocidura monticola* and *Suncus etruscus* were caught at Ulu Gombak FR. The record of these two forest species indicates that Ulu Gombak FR, which is close to populated area, still holds quality habitat. The two shrew species were commonly found in forests with little or no disturbance.
- Listed as Vulnerable by IUCN Red List, *Murina aenea* was recorded at Sungkai WCC, highlighting the importance of the conservation centre as roosting site and eliminates the threat of habitat loss.

Comparative Distribution of Small Mammals Diversity in Protected and Non-Protected Area of Peninsular Malaysia

¹Julius William-Dee, ¹Faisal Ali Anwarali Khan*, ¹Qhairil Rosli, ¹Muhd Amsyari Morni, ²Isham Azhar, ³Lee Sim Lim, ⁴Roberta Chaya Tawie Tingga and ⁴Mohd Ridwan Abdul Rahman

¹Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

²Faculty of Natural Science and Sustainability, University College Sabah Foundation, 20, Jalan Sanzac, Taman Sempelang, 88100 Kota Kinabalu, Sabah, Malaysia

³School of Distance Education, Universiti Sains Malaysia, 11800 USM Pulau Pinang, Malaysia

⁴Centre for Pre-University Studies, Universiti Malaysia Sarawak, Kota Samarahan 94300 Sarawak, Malaysia

Published date: 18 July 2019

To cite this article: Julius William-Dee, Faisal Ali Anwarali Khan, Qhairil Rosli, Muhd Amsyari Morni, Isham Azhar, Lee Sim Lim, Roberta Chaya Tawie Tingga and Mohd Ridwan Abdul Rahman. (2019). Comparative distribution of small mammals diversity in protected and non-protected area of Peninsular Malaysia. *Tropical Life Sciences Research* 30(2): 131–147. <https://doi.org/10.21315/tlsr2019.30.2.10>

To link to this article: <https://doi.org/10.21315/tlsr2019.30.2.10>

Abstrak: Pembangunan yang semakin pesat di Malaysia telah meningkatkan bilangan aktiviti antropogenik, sekaligus menyebabkan kemerosotan alam sekitar. Ini menunjukkan bahawa perlunya inventori hidupan liar dan sumber alam sekitar dijalankan di dalam kawasan hutan yang sedia ada, untuk mempromosikan peningkatan yang seimbang dalam pelan pemuliharaan dan pengurusan yang sedia ada, terutamanya untuk haiwan yang terancam seperti spesies mamalia kecil. Kajian mamalia kecil telah dijalankan di Tasik Bera, Hutan Simpan Ulu Gombak, Pusat Konservasi Hidupan Liar Sungkai, Pulau Pinang, dan Taman Negeri Wang Kelian. *Harp trap*, *mist net*, *cage trap* dan *pitfall trap* telah dipasang untuk kajian. Spesies *Rhinolophus affinis* (N = 61) merupakan spesies yang paling banyak ditangkap, diikuti dengan *R. Lepidus* (N = 27). Manakala untuk mamalia kecil tidak terbang, species *Leopoldamys sabanus* merupakan spesies paling banyak (N = 33) diikuti dengan *Maxomys rajah* (N = 25) dan *Tupaia glis* (N = 22). Dua spesies cencurut, *Suncus etruscus* dan *Crociodura monticola* masing-masing telah ditangkap dengan jumlah satu individu bagi setiap satu spesies. Hutan Simpan Ulu Gombak merekodkan kepelbagaian spesies yang paling tinggi ($H' = 2.754$), manakala Pulau Pinang merekodkan nilai yang paling rendah ($H' = 2.245$). Senarai mamalia kecil yang telah direkodkan melalui kajian ini merupakan maklumat yang signifikan bagi tujuan pemantauan dan konservasi biodiversiti.

Kata kunci: Antropogenik, Cencurut, Inventori, Kelawar, Tikus

*Corresponding author: akfali@unimas.my

Abstract: Rapid urbanisation in Malaysia has led to an increase in anthropogenic activities, inducing degradation of the natural environment. This advocates the necessity of wildlife and resource inventories be conducted at available forested areas, promoting steady improvement in the existing conservation and management plans, especially for threatened taxa such as the small mammals. Small mammals surveys was conducted at Tasik Bera, Ulu Gombak Forest Reserve, Sungkai Wildlife Conservation Centre, Penang Island, and Wang Kelian State Park. Harp traps, mist-nets, cage traps and pitfall traps were set during the surveys. *Rhinolophus affinis* was the most abundant (N = 61) volant small mammal, followed by *Rhinolophus lepidus* (N = 27). Meanwhile, the most abundant non-volant small mammal are *Leopoldamys sabanus* (N = 33), followed by *Maxomys rajah* (N = 25), and *Tupaia glis* (N = 22). Two species of shrews, *Suncus etruscus* and *Crocidura monticola* were caught as singletons. The results indicated that Ulu Gombak Forest Reserve has the highest species diversity ($H' = 2.754$), whereas Penang Island recorded the lowest ($H' = 2.245$). The species lists of small mammals generated from the survey will be significant for various stakeholders' conservation and monitoring plans.

Keywords: Anthropogenic, Rodents, Inventories, Bats, Shrew

INTRODUCTION

Malaysia is one of the biodiversity hotspots in the tropical region of Southeast Asia, with a high multitude of faunal diversification. This is specifically important for small mammals that weigh less than 10 kg, which vastly contributes to their expanded home range. The diversity of mammals within the Malaysian territory is quite significant with at least 440 species of mammals recorded (Department of Wildlife and National Parks [DWNP] 2016), from which 15% (66 species) of it are endemic to Malaysia (Payne *et al.* 1985; Francis 2008).

There are at least seven new mammalian species discovered in Malaysia since the year 2000, signifying the prevailing faunal diversification in this region. Moreover, numerous species were discovered either through morphological or molecular analysis or the results of further exploration. These include *Rhinolophus chiewkweeae* from Johor (Yoshiyuki & Lim 2005), *Kerivoula krauensis* from Pahang (Francis *et al.* 2007), *Neofelis diardi diardi* from Sarawak (Wilting *et al.* 2007), *Neofelis diardi borneensis* from Sabah (Wilting *et al.* 2007), *Nycticebus spp.* from Borneo (see Munds *et al.* 2013), *Rhinolophus francisi* from Sabah (Soisook *et al.* 2015) and *Rhinolophus luctoides* (Volleth *et al.* 2015). These findings highlight the importance of wildlife inventories in providing useful information to uncover underrepresented diversity and to improve management plans.

The presence of various types of habitats plays a major role in the richness of Malaysia's diversity (Ashton 1969; Baillie *et al.* 1987; Debski *et al.* 2002). Authorities in Malaysia have identified the significance of preserving the natural environment as a part of protecting specific areas and their contents (wildlife and resources). In response to this, a total of 5,611,614 ha of the forest area has been gazetted (2.9 million ha in Peninsular Malaysia; 837,553.80 ha in Sarawak;