

The Sarawak Museum Journal

Vol. LXVII No. 88

December 2010



ISSN: 0375-3050

E-ISSN: 3036-0188

Citation: M.R.A. Rahman et al. (2010). Diversity of Bats in Two Protected Limestone Areas in Sarawak, Malaysia. The Sarawak Museum Journal, LXVII (88): 209-246

DIVERSITY OF BATS IN TWO PROTECTED LIMESTONE AREAS IN SARAWAK, MALAYSIA

M.R.A. Rahman, Roberta Chaya T. Tingga, Noor Hali2a Hasan, Sigit Wiantoro, Anang Setiawan Achmadi, Eileen Lit, Besar Ketol, Huzal Irwan Husin and M.T. Abdullah

ABSTRACT

An assessment of bats diversity from the two limestone protected area of Sarawak, Niah National Park (NP) and Wind Cave Nature Reserve (NR) was conducted from November 2007 until April 2009. The assessments were aimed at updating the current state of bats diversity in relation with previous studies done at limestone areas in Sarawak. Eight to twelve mist nets and three harp traps were used, with accumulated effort of 572 trap-nights for both Niah NP and Wind Cave NR. A total of 1,520 individuals representing 36 species from 17 genera and 10 families were recorded. *Penthetor lucasi*, *Hipposideros cervinus* and *Cynopterus brachyotis* were the three most abundant species captured in both sampling areas. Meanwhile, nine species of bats are new records for both areas. Seven out of nine are new records for the Niah NP; *Hipposideros ater*, *H. bicolor*, *H. cineraceus*, *Coelops robinsoni*, *Rhinolophus trifoliatus*, *Murina rozendali* and *Kerivoula hardwickii*, while *H. ridleyi* and *Tylonycteris robustula* are new records for Wind Cave NR. This present information is crucial for the future management and conservation of cave area by wildlife management agencies in Sarawak.

Keywords: Bats diversity, limestone protected area, Niah National Park, Wind Cave Nature Reserve, new records.

DIVERSITY OF BATS IN TWO PROTECTED LIMESTONE AREAS IN SARAWAK, MALAYSIA

by

M.R.A. Rahman, Roberta Chaya T. Tingga, Noor Haliza Hasan,
Sigit Wiantoro, Anang Setiawan Achmadi, Eileen Lit, Besar Ketol,
Huzal Irwan Husin and M.T. Abdullah

Abstract

An assessment of bats diversity from the two limestone protected area of Sarawak, Niah National Park (NP) and Wind Cave Nature Reserve (NR) was conducted from November 2007 until April 2009. The assessments were aimed at updating the current state of bats diversity in relation with previous studies done at limestone areas in Sarawak. Eight to twelve mist nets and three harp traps were used, with accumulated effort of 572 trap-nights for both Niah NP and Wind Cave NR. A total of 1,520 individuals representing 36 species from 17 genera and 10 families were recorded. *Penthetor lucasi*, *Hipposideros cervinus* and *Cynopterus brachyotis* were the three most abundant species captured in both sampling areas. Meanwhile, nine species of bats are new records for both areas. Seven out of nine are new records for the Niah NP; *Hipposideros ater*, *H. bicolor*, *H. cineraceus*, *Coelops robinsoni*, *Rhinolophus trifolius*, *Murina rozendali* and *Kerivoula hardwickii*, while *H. ridleyi* and *Tylonycteris robustula* are new records for Wind Cave NR. This present information is crucial for the future management and conservation of cave area by wildlife management agencies in Sarawak.

Keywords: Bats diversity, limestone protected area, Niah National Park, Wind Cave Nature Reserve, new records.

INTRODUCTION

Sarawak is the largest state in Malaysia, covering an area about 124,449.5 km² (16.67 %) out of 746,337 km² total area of Borneo (MacKinnon *et al.*, 1996). Limestone forest is one of the nine main forest types documented in Sarawak (Hazebroek and Abang Morshidi, 2000). In Sarawak, the limestone forest covers

about 520 m² or 0.4% of the total area (Julaihi, 2004; Banda *et al.*, 2004). Many of the limestone hills are found from Bau to Tebakang, Niah and the Melinau massif in Mulu. The largest limestone massif is Melinau Formation, on the boundary between Miri and Limbang divisions, which extend 38 km continuously in length and 8 km wide (Wilford, 1964).

Limestone areas are known to harbour high levels of endemism and are also home to many species of flora and fauna which lived in nutrient-poor conditions (Vermeulen and Whitten, 1999; Lee and Krishnapillay, 2004). The richness of the plant life is in part due to the variety of the microhabitats that limestone hills provide within a very restricted area. The caves found in the limestone outcrops are also important habitat for bats. Fruit bats play an important role as pollinators, as well as providing guano as the energy source for cave ecosystem (Chapman, 1985; MacKinnon *et al.*, 1996; Hall *et al.*, 2002). Insectivorous bats also inhabit caves and many of their preys are harmful pests to crops.

In terms of bats diversity, Borneo harbours 96 species of bats (Struebig *et al.*, 2010), which made up 42% of mammals species in Borneo. Sarawak itself, recorded 73 species of bats (Jayaraj, 2008). Bats play an important role in regulating tropical rainforest ecosystem as well as a bio indicator for disturbances (Marshall, 1985; Fujita and Turtle, 1991; Davidson and Zubaid, 1992; Medellin *et al.*, 2000). There are a number of studies conducted in Sarawak (Medway, 1959; Fodgen, 1966; Harrisson, 1966; Lim *et al.*, 1972; Start, 1972; Churchill and Zborowski, 1987; Hall, 1996; Abdullah *et al.*, 1997, 2000; Abdullah and Hall, 1997; Salleh *et al.*, 1998; Tuen *et al.*, 2000; Abang Arabi, 2000; Hall *et al.*, 2002, 2004; Abdullah *et al.*, 2003, Imelda *et al.*, 2003; Jub *et al.*, 2003; Karim *et al.*, 2004; Mohd-Azlan *et al.*, 2005, 2008; Pathe *et al.*, 2005; Jayaraj *et al.*, 2006; Faisal *et al.*, 2007; Jayaraj, 2008; Fukuda *et al.*, 2009; Amit, 2009; Azhar *et al.*, 2009; Jenang *et al.*, 2009; Mahusin, 2009). These studies include the distribution, diversity and observation of new records of chiropterans throughout Sarawak. Most of these studies were conducted in national parks and forest reserves where the habitats are less disturbed.