

GUNUNG SANTUBONG

Where Nature Meets Culture



Life from Headwaters to the Coast

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Bats

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The forests of Santubong National Park include mangroves, mixed-dipterocarp, heath (Kerangas), and hill forests. This complex environment supports a rich bat diversity, as also observed at the nearby Bako National Park and Tanjung Datu National Park. Observing this diversity is sometimes not an easy affair, as the upland areas are challenging for the deployment of traps. The biodiversity enumerated in this chapter is based on trapping effort that focused on the lower parts of the Park, along established trails.

Bat trapping was conducted during two separate field expeditions, in the months of November 2015 and October 2016, with eight and six trapping nights duration, respectively. Harp traps and mist-nets were set along trails and small creeks. Traps were set on trails leading to the summit, which is



Fig. 1. Frugivorous bats from the family Pteropodidae: Lesser Short-nosed Fruit Bat (Left) and Lucas's Short-nosed Fruit Bat (Right). Only two species of frugivorous bats were caught. Besides the steep landscape limiting the setting of traps, it may be that the trees around the sampling areas were not fruiting or flowering.

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Fig. 2. Insectivorous bats from four families. From top left-clockwise: Lesser False Vampire Bat (Family Megadermatidae), Malayan Slit-faced Bat (Family Nycteridae), Greater Sheath-tailed Bat (Family Emballonuridae) and Hardwicke's Woolly Bat (Family Vespertilionidae). All these species were caught using harp trap set across trails.

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Fig. 3. Insectivorous bats from the family Hipposideridae. Top (From left to right): Intermediate Leaf-nosed Bat, Diadem Leaf-nosed Bat and Cantor's Leaf-nosed Bat. Bottom (From left to right): Fawn-coloured Leaf-nosed Bat, Dusky Leaf-nosed Bat and Dayak Leaf-nosed Bat. This is the most diverse family recorded in Santubong National Park. Members of this family are among the most commonly recorded species in most of the lowland forests of Sarawak.

mostly covered with mixed-dipterocarp and heath forest. From these surveys, a total 79 individual bats, from seven families, representing 14 species, were collected.

Only two species of frugivorous bats from the family Pteropodidae were recorded from both sampling trips, using mist-nets. This record includes the Lesser Short-nosed Fruit Bat (*Cynopterus brachyotis*) and Lucas's Short-nosed Fruit Bat (*Penthetor lucasi*), both of which are commonly found in lowland and lower montane forests, and members of the family known to play an important role as pollinators and seed dispersers. Fruit bats, specifically, help in dispersing seeds when they ingest fruits, and either eject or defaecate the seeds on the wing. This is significant for plant colonization and in the regeneration of forests. Although the Park's coastal edge comprises mangrove forests, no nectarivorous bats (such as *Macroglossus minimus*) were recorded.

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Some of these species are reported common in mangrove forests, and their absence may be an anomaly of non-detection (such as bats not using the flyways with traps, or the lack of flowering mangrove trees, at least at the time of sampling).

Insectivorous bats are represented by a total of 12 species, belonging to six families, including Megadermatidae, Emballonuridae, Nycteridae, Rhinolophidae, Hipposideridae, and Vespertilionidae. Of these, the Malayan Slit-Faced Bat (*Nycteris tragata*) is the rarest, and is typically found in primary forests. This species is sensitive to habitat disturbance, and listed as Near Threatened in the IUCN Red List, with its decreasing population trend. Its occurrence further highlights the importance of Santubong National Park as bat conservation site in western Sarawak.

The Hardwicke's Woolly Bat (*Kerivoula hardwicki*) is the only member of the family Vespertilionidae recorded in the Park. The low record of other bats from the family perhaps is a reflection of limited trapping sites. Typically, members of this family are captured in harp traps that are fixed across small streams or mist-net across pools. Although Santubong is littered with water courses, the extensive areas along such habitats that are boulder-strewn, coupled with small streams, made it difficult to place harp traps. The Fawn Leaf-nosed Bat (*Hipposideros cervinus*) was the most abundant bat recorded



Fig. 4. Insectivorous bats from the family Rhinolophidae: Woolly Horseshoe Bat (Left) and Trefoil Horseshoe Bat (Right). Similar to family Hipposideridae, members of this family can also be found common throughout the lowlands of Sarawak. Both species were caught using harp traps set across established trails, and are known to roost in tree hollows, culverts and large boulders.

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during our sampling trips. This species is also the most common bat in other national parks in Sarawak. Cave-dwelling species, such as *Penthetor lucasi*, and members of the families Rhinolophidae, Hipposideridae and Emballonuridae were also captured in mist-nets and harp traps.

This survey results hint at the potential of Gunung Santubong National Park for harbouring additional bat species. An extended survey period, conducted at different times of the year, as well as increasing the sampling areas would no doubt produce additions to the known list of bat species in the area.

Checklist of Bats

| Family | Scientific Name | Common Name |
|------------------|--|-------------------------------|
| Pteropodidae | <i>Cynopterus brachyotis</i> (Müller, 1838) | Lesser Short-nosed Fruit Bat |
| | <i>Penthetor lucasi</i> (Dobson, 1880) | Lucas's Short-nosed Fruit Bat |
| Rhinolophidae | <i>Rhinolophus luctus</i> Temminck, 1834 | Woolly Horseshoe Bat |
| | <i>Rhinolophus trifolius</i> Temminck, 1834 | Trefoil Horseshoe Bat |
| Hipposideridae | <i>Hipposideros ater</i> Templeton, 1848 | Dusky Leaf-nosed Bat |
| | <i>Hipposideros cervinus</i> (Gould, 1854) | Fawn Leaf-nosed Bat |
| | <i>Hipposideros diadema</i> (Geoffroy, 1813) | Diadem Leaf-nosed Bat |
| | <i>Hipposideros dyacorum</i> Thomas, 1902 | Dayak Leaf-nosed Bat |
| | <i>Hipposideros galeritus</i> Cantor, 1846 | Cantor's Leaf-nosed Bat |
| | <i>Hipposideros larvatus</i> (Horsfield, 1823) | Intermediate Leaf-nosed Bat |
| Megadermatidae | <i>Megaderma spasma</i> (Linnaeus, 1758) | Lesser False Vampire Bat |
| Emballonuridae | <i>Emballonura alecto</i> (Eydoux & Gervais, 1836) | Greater Sheath-tailed Bat |
| Nycteridae | <i>Nycteris tragata</i> (Andersen, 1912) | Malayan Slit-faced Bat |
| Vespertilionidae | <i>Kerivoula hardwicki</i> Horsfield 1824 | Hardwicke's Woolly Bat |