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Short Communication

Silvered Langur (*Trachypithecus cristatus*) Survey in Sibuti Wildlife Sanctuary, Miri, Sarawak

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Abstract
A rapid and passive primate survey using a scanning technique was conducted in Sibuti Wildlife Sanctuary (Sibuti WS) from 11th to 16th July, 2018. This study provided the first confirmed record of the presence and the diet of silvered langur in the wildlife sanctuary. A group of silvered langur that comprise 20 to 30 individuals were observed in the vicinity of the sanctuary. The diurnal langur feeds on fig plants (*Ficus* sp.), *simpoh air* (*Dillenia suffruticosa*) and tree from the family Leguminosae. However, this langur population appears to be isolated and is probably decreasing due to limited food sources, intra- and interspecific competition, and hunting pressure by local people.

Keywords: diet, ecology, scan sampling, silvered langur

Introduction
The Malaysian primate population is not an exception to the ongoing decline of the global primate population due to human activities such as land conversion for oil palm plantations (Meijaard & Nijman, 2020). Despite the anthropogenic activities, ongoing monitoring efforts are still the practical means to assess changes in wildlife population trends. This is particularly important for Colobine monkeys in determining their population size and distribution. This information will be critical in developing conservation plans of the targeted species such as silvered langur to increase their population size (Revoro et al., 2015; Matsuda et al., 2020). The IUCN Red List has listed *Trachypithecus cristatus* (silvered langur) as a rare species that is categorised as Vulnerable (VU) due to poaching activities by local people (Chivers & Davies, 1979; Meijaard, & Nijman 2020).

Figure 1. Silvered langur was found at Sibuti WS headquarters.

A silvered langur, also known as a silver leaf monkey (Figure 1), has unique characteristics such as a silver spike on its head and straight whiskers which differentiate them from other langur species. Silvered langur are also known as folivorous primates because their diet comprises 91% of leaves and 9% of fruits (Hock & Sasekumar, 1979). Diet studies on silvered langur in Bako National Park, Sarawak recorded at least 10 species of plants which include *Buchanania* sp., *Vitex pubescens*, *Pandanus* sp., *Nephrolepis bisserata*, *Dillenia suffruticosa*, *Ceriops tagal*, *Pongamia pinnata*, *Calophyllum inophyllum*, *Hibiscus tiliaceus*, and *Barringtonia asiatica* (Laman et al., 2007; Wan-Azman, 2017). This unique langur can be found in the riparian and mangrove forests (Meijaard & Nijman, 2020). Silvered langur can be found in Sumatra, Natuna Island and Borneo (Harding, 2010).

In Malaysian Borneo, specifically Sarawak, silvered langur has been recorded in many protected areas, as listed in Figure 2 (e.g. Laman et al., 2007; Vun et al., 2011; Shuib et al., 2012; Kombi & Abdullah, 2016; Phillipps & Phillipps, 2016; Khan et al., 2017). These include Bako National Park (Bako NP), Kuching Wetlands National Park (Kuching WNP), Kampung Pulau Salak (Salak KP), Santubong National Park (Santubong NP), Permai Resort Rainforest (Permai RR), Samunsam Wildlife Sanctuary (Samunsam WS), and Maludam National Park (Maludam NP). Although Sibuti Wildlife Sanctuary (Sibuti WS) is along a coastal

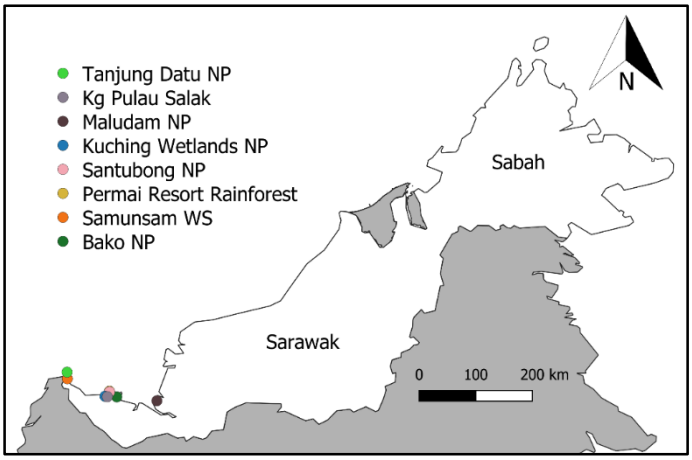

Figure 2. Location of Silvered Langur that has been recorded in Sarawak (e.g. Laman et al., 2007; Vun et al., 2011; Shuib et al., 2012; Kombi & Abdullah, 2016; Phillipps & Phillipps, 2016; Khan et al., 2017)

area where a majority of silvered langurs are recorded, information on their distribution at Sibuti WS remained unclear. The only known information is from visitors' online blogs. Herein, we present the first report on this species, along with a note on their diet from the observation recorded at Sibuti WS.

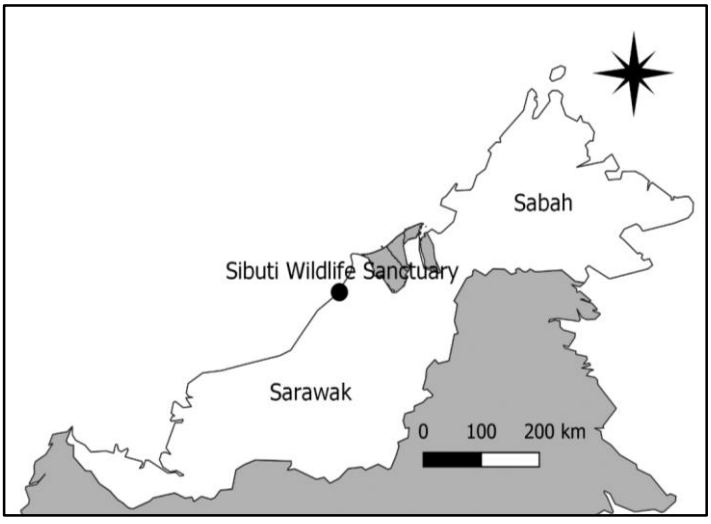

Figure 3. Location of survey site which covered mangrove forests at Sibuti Wildlife Sanctuary, Bekenu, Miri, Sarawak

Sibuti WS is one of the five wildlife sanctuaries in Sarawak (Samunsam WS, Lanjak Entimau WS, Pulau Tukong Ara-Banum WS and Sungai Jelangai WS) and was gazetted on 29th May 2000, covering 678 hectares. It is located in the Miri district or, to be more specific, in the Bekenu area, about 51.8 km away from Miri town (or about 1-hour drive from Miri). According to Shah et al., (2016), the sanctuary is mostly covered by a riverine mangrove forest, which is dominated by *Bakau minyak* (*Rhizophora apiculate*). Sibuti WS is a natural stopping area for migratory birds such as the stork-billed kingfisher (*Pelargopsis capensis*) and olive-winged bulbul (*Pycnonotus plumosus*). Sibuti WS personnel also highlighted that proboscis monkeys (*Nasalis larvatus*) could be occasionally spotted, although the exact microhabitat of the animal within the sanctuary remains undetermined. Besides birds and the possible proboscis monkey record, not much is known about wildlife in the sanctuary. Despite being unexplored, Sibuti WS was previously reported to have undergone anthropogenic activities (Saifullah et al., 2014; Shah et al., 2016). Such observation highlights the importance of continuous diversity assessment to document and assess the wildlife population trend in the sanctuary.

Methodology

Surveys were conducted from 11th to 16th July, 2018 to record the population size and foraging activities. Surveys were done around the sanctuary's headquarters (N 4º2'4.023" E 113º47'19.798), and boat surveys were conducted along Sibuti River (N 4º1'18.1812" E 113º47'1.8494") and Kelulit River (N 4º3'29.466" E 113º50'39.094) for five consecutive days. For boat surveys, boats were slowed down if silvered langur was sighted, to record their population size and their diet. Surveys were conducted with the assistance of Sibuti WS staff to locate and record silvered langur's diet at Sibuti WS. Surveys were performed twice per day; 6.30 am to 9.00 am and 12.00 noon to 5.00 pm. These periods were chosen based on previous reports of the active and foraging time for silvered langur (Laman et al., 2007; Wan-Azman, 2017).

Result

Within five days of sampling, the silvered langur was only sighted on the first and the last day of the survey at the Sibuti WS headquarters. A social troop of silvered langur was seen during the daytime on the first and the last day. Both observations suggest that they came from the same group consisting of 20 to 30 individuals. From the observations, their diet comprises of unripe fruit from *Simpoh air* (*Dillenia suffruticosa)*, fig plants (*Ficus* sp.) and fruit from family

Leguminosae. The boat survey at Sibuti and Kelulit rivers only found a few individuals of non-targeted species, which is the long-tailed macaque (*Macaca fascicularis*).

Discussion

Unlike other sites where silvered langur was recorded, in Sibuti WS the silvered langurs quickly leaped away once they detected human presence. In contrast, in Bako NP, the silvered langur was already habituated to visitors coming into the park. However, they produce a warning sound whenever they feel threatened, as they can make 13 different vocalisations such as warning, conflict, fear and others (Harding, 2010). In terms of food supplies, in Bako NP the silvered langur has various food sources such as *Ceriops tagal*, *Pongamia pinnata*, *Calophyllum innophylum*,*Hibiscus tilaceus* and others (Laman et al., 2007; Wan-Azman, 2017). Meanwhile in Sibuti WS the silvered langur may have limited variety of food sources compared to Bako NP. As observed in Sibuti WS and compared to those reported in Bako NP, the silvered langur from both sites preferred to consume the *simpoh air* plant as their main dietary intake (Wan-Azman, 2017). Additionally, there are two types of dietary intake namely *Ficus* sp. and seeds from the family Leguminosae ingested by silvered langur in Sibuti WS, which was not reported in Bako NP (Laman et al., 2007). *Ficus* sp. from the family Moraceae has elements of flavonoids, sugar, vitamin A and vitamin C, which may boost the silvered langur's immune system (Somashekhar et al., 2013). In addition, it is a good food source as it may help prevent constipation (Chan et al., 2017). Seeds or legumes from the family Leguminosae provide a range of essential nutrients such as protein, low glycemic index carbohydrates, dietary fibre, minerals and vitamins (Cakir et al., 2019). Legumes are also composed of high protein content compared to other cultivated plants because of the nitrogen-fixation bacteria that live in the nodule of legume roots (Kouris-Blazos & Belski, 2016). The presence of derived bioactive peptides in legumes may further add to their food quality (Lopez-Barrios et al., 2014; Ortiz-Martines et al., 2014). The young leaves and seed-based diets also provide additional nutritional advantages as young leaves provide a good source of mineral and seeds can serve as an energy source (Hanya & Bernard, 2015). This finding also highlights the vital role of primates in seed dispersal to sustain the forest ecosystem.

Conclusion

Silver langur's dietary intake in Sibuti WS is slightly different from the populations in Bako NP due to the limited food sources. Therefore, these langurs put extra effort in their foraging activity to get enough food supplies. Their diet comprises *simpoh air*, *Ficus* sp. and seeds from the family Leguminosae. These wild nutritional foods have benefited them in surviving at Sibuti WS. An additional long term study that focuses on their population structure and trend is important to better manage them in Sibuti WS.

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