

# Preliminary Study of Bird Species Composition in Kawang Forest Reserve (KFR), Papar, Sabah

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## ABSTRACT

Birds have their own importance in the ecosystem for maintaining the sustainable population levels of their prey and predator, and for plant reproduction as pollinators. The preliminary study about bird species composition was conducted in Kawang Forest Reserve (KFR), Papar in August 2019. The main objective of this study is to determine the bird species according to its conservation status and comparing bird composition with respect to its family using the mist-net method. This survey was conducted for 5 days started from 27<sup>th</sup> August to 31<sup>st</sup> August 2020 at two different areas where 4 mist-net were installed near the river and the other 4 mist-net were installed on the ridges. The results showed that 39 individuals with 19 different species belong to 9 different families had been found in the areas. The Emerald Dove (*Chalcophaps indica*) species were high number of individual founded while Bulbul species from Pycnonotidae family were high species founded in KFR.

**KEYWORDS:** Kawang Forest Reserve; Bird Species; Mist-net Method; Species Composition; Conservation Status

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Short Communication

## INTRODUCTION

Birds are one of the biggest groups in wildlife component. Birds were known as bio-indicators and also act in ecosystem functioning and balancing (Kiros et al., 2018; Lim & Mojiol, 2019). They were also agent in the nutrient cycles, plant gene for pollination and others. Bird assessment is one of the important tools for biodiversity conservation and also to identify the conservation actions that are needed (Sethy et al., 2015). Kawang Forest Reserve (KFR) is one of the conservation areas in Sabah. This forest reserve was gazette on March 1957 as Class III Forest Reserve within area 1,551 hectares to maintain an area that contains several flora and fauna. Then, the forest area was regazette again for the second time in 2014 as Class I Forest Reserve. The purpose of new classification for the forest area was to improvise the protection of biodiversity and ecosystem in this area. It is believed that this area contained high natural resources species of flora and fauna. Hence, the aims of this study were to determine bird species according to its conservation status and comparing bird composition with respect to its family using the mist-net method.

## METHODOLOGY

### *Study Site*

The Kawang Forest Reserve (KFR) was located around 30 kilometres from Kota Kinabalu city and 23 kilometres from Papar town. This forest area was managed by the Forestry Department Kota Kinabalu and have one Recreation Centre (Pusat Sejadi).

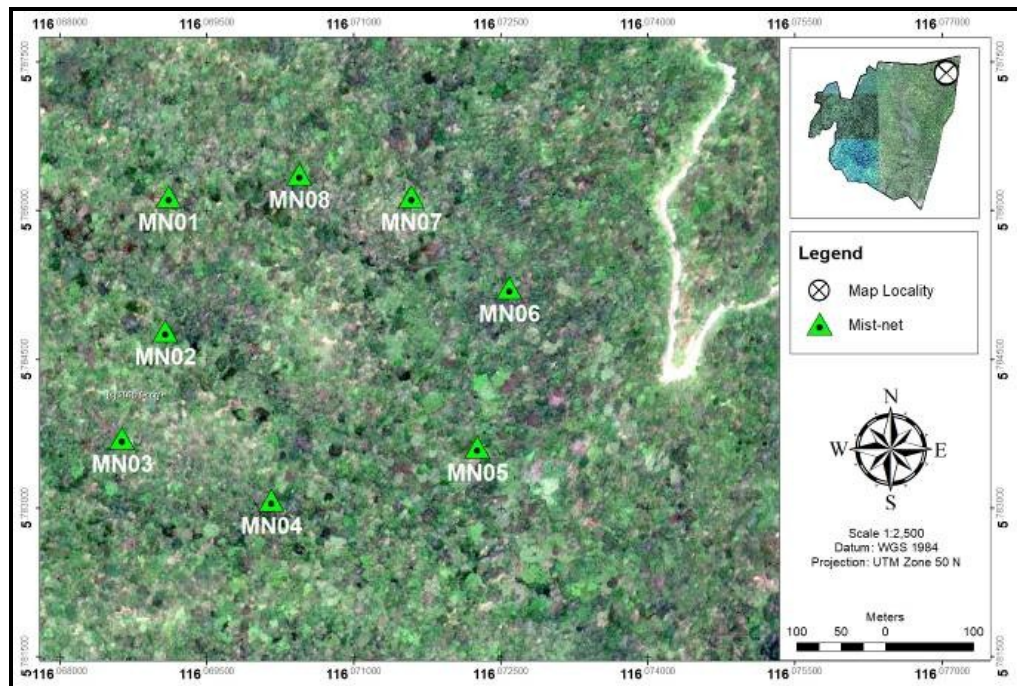


Figure 1. Location of KFR on Google map.

#### *Mist-Net Method*

Japanese hunters had developed mist-net method to capture bird as food resources over 300 years ago. Nowadays, this method was used to capture bird for research purpose. Mist-net method is an important method to monitor the population, assess species composition, relative abundance, population size and demography (Dunn & Ralph, 2004).

From 27<sup>th</sup> August until 31<sup>st</sup> August 2019, field survey was carried by using 8 mist-nets. These sites were chosen based on the habitat of the bird and the capture would usually be success. The nets were opened at 6:00 am in the morning and were checked every 2 hours until 6:00pm in the evening. The nets should be closed before night to prevent the nets damaged by fruit bats and beetles. Trapped birds were identified, measured, tagged and released back to the survey site.

## RESULT AND DISCUSSION

A total of 19 bird species in 9 families have been recorded from 8 mist-nets within the habitat area as shown in Table 1. The Emerald Dove (*Chalcophaps indica*) was the most netted while the Red-eyed Bulbul (*Pycnonotus brunneus*) was the least founded among the others species. The Streaked-eyed Bulbul (*Ixos malaccensi*), Grey-chested Jungle Flycatcher (*Cyornis umbratilis*), Black-throated babbler (*Stachyris nigricollis*) and the Banded Broadbill (*Eurylaimus javanicus*) were the only 4 species that could be considered as near threatened species and the other 15 species are considered as least concerned species under IUCN Red Data Book.

**Table 1.** Bird composition at Kawang Forest Reserve (KFR)

No.	Family / Scientific name	Vernacular name	No. captured	Conservation status
<b>Nectariniidae</b>				
1	<i>Arachnothera longirostra</i>	Little spiderhunter	4	LC
2	<i>Cinnyris asiaticus</i>	Purple neck sunbird	1	LC
3	<i>Hypogramma hypogrammicum</i>	Purple-naped Sunbird	1	LC
<b>Pycnonotidae</b>				
1	<i>Ixos malaccensi</i>	Streaked-eyed bulbul	1	NT
2	<i>Pycnonotus brunneus</i>	Red-eyed bulbul	5	LC
3	<i>Pycnonotus xanthopygos</i>	Spectacled bulbul	4	LC
4	<i>Pycnonotus plumosus</i>	Olive-winged bulbul	1	LC
5	<i>Pycnonotus simplex</i>	Cream-vented bulbul	3	LC
6	<i>Alophoixus ochraceus</i>	Ochraceus bulbul	2	LC
7	<i>Alophoixus tephrogenys</i>	Grey-cheeked bulbul	1	LC
<b>Stenostiridae</b>				
1	<i>Culicicapa ceylonensis</i>	Grey-headed canary flycatcher	1	LC
<b>Columbidae</b>				
1	<i>Chalcophaps indica</i>	Emerald dove	7	LC
<b>Muscicapidae</b>				
1	<i>Cyornis umbratilis</i>	Grey-chested Jungle Flycatcher	1	NT
<b>Timaliidae</b>				
1	<i>Stachyris nigricollis</i>	Black-throated babbler	1	NT
2	<i>Cyanoderma erythroptera</i>	Chestnut-winged babbler	1	LC
3	<i>Stachyris poliocephala</i>	Grey-headed babbler	1	LC
<b>Eurylimidae</b>				
1	<i>Eurylaimus javanicus</i>	Banded broadbill	1	NT
<b>Dicaeidae</b>				
1	<i>Prionochilus xanthopygius</i>	Yellow-rumped flowerpecker	2	LC
<b>Alcedinidae</b>				
1	<i>Ceyx rufidorsa motleyi</i>	Rufous-backed kingfisher	1	LC

LC: Least Concern

NT: Near Threatened

The birds were hard to capture in the morning because of the condition an area such as high humidity and it caused the nets were visible so only a few birds could be caught. A lot of water contained in the air in the morning and this water vapor dropped in the net. It made the net looked shiny and glowing as the sunlight reflected the water droplet. The birds that fly near the nets would be more conscious and fly further away. In the noontime, the birds could be captured because the sunlight had penetrated through the crown of tree. During this time, the humidity dropped due to the hot environment and it made the nets became less visible.

The highest number of bird species found in this area was Emerald Dove (*Chalcophaps indica*). This species come from pigeon family and it was common species in the rainforest and similar dense wet woodlands, farms, gardens, mangroves and coastal heaths. This showed that Kawang Forest

Reserve (KFR) was the most appropriate habitat for this species. Other than second most species, bulbul from Pycnonotidae family were the common species that had been caught in this study. This species could not only be found in the forest but it also could be found in the rural area with scattered trees and scrub. It also could adapt to man-made habitats especially gardens (Keith, 1992). Thus, this species could be found in KFR because this area has been Commercial Forest since 1957 to 2014.

In addition, this study also used Simpson Diversity Index (1-D) and Shannon Diversity Index (H') to find out the diversity of bird species in this area. Based on the data analysis, 1-D has 0.9312 value while H' has 2.378 value which were both has a high value. If the H' value in the range between 1.5 – 3.5, it was high and normal for the 1 virgin forest (Magurran, 2004). Thus, the higher 1-D value and H' value, the greater the diversity in the KFR.

#### Recommendation

There were some recommendations that could be done in this forest area such as more research to get more information and long term result about avian study at KFR. The area can be divided according to the suitability of study that researcher want to do. For example, group of researcher in wildlife have their own plot to collect data so that the other group of researcher will not disturb that plot.

#### CONCLUSION

Kawang Forest Reserve (KFR) was the home to the numerous bird species as it has a diverse of flora and fauna species that could continuously provide food resources to the wildlife especially bird. This study concluded that Emerald Dove (*Chalcophaps indica*) was the highest number of individual while bulbul was the highest number of species caught in this forest area. Other than that, there were 4 species that could be considered high conservation status which were Streaked-eyed Bulbul (*Ixos malaccensi*), Grey-chested Jungle Flycatcher (*Cyornis umbratilis*), Black-throated babbler (*Stachyris nigricollis*) and the Banded Broadbill (*Eurylaimus javanicus*).

If the time of caught were extended, many more species were expected to be found in this forest area. This forest area should be gazette widely in order to recover the loss of habitat fragmentation. Hopefully, there are more and detailed study about the bird biodiversity can be done in the future considering this forest area has many natural resources that has yet explored.

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