Updates on Avifauna Community in Tasik Meranti, Wang Kelian, Taman Negeri Perlis

A Z Zam Beri, M A Shahfiz, N H Ahmad Ruzman, N F M Fauzi, A A Ag Ahmadni and F Mohamad

1Zoology Branch, Forest Biodiversity Division, Forest Research Institute Malaysia, 52109 Kepong, Selangor Darul Ehsan
2Faculty of Science and Technology, The National University of Malaysia, 43600, Bangi, Selangor, Malaysia
3Perlis State Forestry Department, No. 71, Jalan Kaki Bukit, Kampung Kechor Behor Ampang, 01000, Kangar Perlis
*Corresponding author: shahfiz@frim.gov.my

Abstract. The information and status of the avifauna community that resides in Tasik Meranti, Wang Kelian, Taman Negeri Perlis are mostly outdated since the last survey conducted was 20 years ago. Therefore, the study aims to update the status and establish a checklist to compare the bird species present within the vicinity of Tasik Meranti, Wang Kelian, Taman Negeri Perlis. The survey was conducted during a short expedition held on 15-18 August 2019. Based on the field observation, a total of 20 species of birds from 14 families were recorded. The recent survey recorded an additional 18 bird species from 8 families, totalling the current inventory of 45 bird species from 24 families. Species from the family Pycnonotidae dominated the site with six species, namely Pycnonotus finlaysoni, Pycnonotus brunneus, Pycnonotus plumosus, Pycnonotus goiavier, Iole charlottae and Pycnonotus simplex. The high number of species present from the family Pycnonotidae may be due to the availability of food resources. Out of 45 species of birds in the current checklist, three species are listed as near threatened and one species as vulnerable based on the IUCN Red List. Therefore, the result documents the importance of the site for the avifauna community. Therefore, further studies are needed to understand the avifauna population dynamics in Taman Negeri Perlis.

1. Introduction
Perlis state covered over 12,179 ha of forested land and comprised of seven permanent reserved forests. Located in the north-western region of Perlis, the Taman Negeri Perlis itself covers approximately a total of 5,015 ha. The formation of the tower karst and extensive cave system that falls along the Nakawan Range eventually provide a diverse, complex terrestrial ecosystem for the organism that populate the areas. In an ecosystem, bird composition studies are the best tool to assess the fitness state of the forest biodiversity. Birds are considered one of the magnificent components of an ecosystem. The bird community plays a significant role in distributing seeds that influence a complex habitat's heterogeneity [1]. Since the birds are sensitive towards habitat disturbance, the birds' population is deteriorating over time due to human involvement in land-use change for agricultural and development purposes [2].

Previously, numerous information on herpetofauna [3] and primate, particularly to stump-tailed macaque (Macaca arctoides) Taman Negeri Perlis [4] are available. However, the information on avifauna at Taman Negeri Perlis was in 1999 [5]. This indicates the lack of knowledge of the bird's
community on the site in the present day. Hence, this short expedition aims to assemble a checklist on the bird species and reform the status of the species presented at the Tasik Meranti, Wang Kelian, Taman Negeri Perlis specifically. The knowledge obtained from the survey conducted is crucial to assess the site's suitability as one of the benchmarks for avifauna community studies in Taman Negeri Perlis.

2. Methodology

2.1 Study site

Taman Negeri Perlis is located at the northernmost tip of Peninsular Malaysia and forms a border with the Thaleban National Park, Thailand. Often marked with a dry season that can last up to two to three months between December and March, this uniquely formed limestone hills structure was known to have a low capacity of groundwater storage [5]. Therefore, the vegetation that assembles at the state park is highly influenced by the atmospheric conditions of the site. According to Whitmore [6], the forest that emerged at the Taman Negeri Perlis was distinguished as the semi-deciduous rainforest and was denoted as the water catchment areas through the economic valuation study conducted on the site [7]. Taman Negeri Perlis is comprised of Mata Ayer Forest Reserve and Wang Mu Forest Reserve. The study site, Tasik Meranti, is located within Wang Mu Forest Reserve and 6 km away from Wang Kelian. Within the study site, the specific trail chosen for bird surveying combines several habitat types, consisting of forest areas and plantation areas for agricultural activities. The plantation areas that consist of the oil palm and durian orchard were located in patches along the trail.

2.2 Field Observation

The short expedition conducted to inventory the bird species at the Tasik Meranti, Wang Kelian, Taman Negeri Perlis took place for three consecutive days from 15 until 18 August 2019. A team of three observers surveyed and recorded the bird species available along the trail within the vicinity of the Tasik Meranti by direct visual observation and opportunistic sightings. The observation of birds was conducted throughout the active duration of the day for five hours effort between 0730 hours until 1130 hours daily by using Minox (10x42), Bushnell (10x42) and Nikon (16x55) binoculars. The bird species by referring to the Birds of South-East Asia by Robson [8]. All species identified were documented.

3. Result and Discussion

A total of 20 bird species from 14 families are documented. Among the families, Pycnonotidae and Muscicapidae had the most significant number of species recorded. Respectively, the families represent a total of four species (20.0%) and three species (15.0%) of different bird species; meanwhile, other families are described with only two or fewer. Compared to the last recorded data, 18 species comprising eight families were added to the recent birds’ inventory. This indicates a 40% increment in the total number of bird species present on the site from the past 20 years. Adding up with the last recorded data of the avian community on the site, the recent checklist exhibits 45 species comprising 24 families. Although with a short duration of the survey, the data of the avian community recorded from the Tasik Meranti, Wang Kelian, Taman Negeri Perlis are promising. Hence, with an expectation that more bird species being recorded, further studies are highly encouraged to cover the diverse habitat and ecosystem within or adjacent to the study site.

The current survey noted that the family Pycnonotidae dominated the highest number of species present on the study site. Predominantly fed on fruits, the bulbul species represented by the family Pycnonotidae are classified as frugivores based on their feeding guild [9]. The bulbul species consume a wide variety of sugar-rich fruits, mainly figs, and thus the high total number of these species presented indicates that the vegetation of the site is rich with plants that bear seeds. Based on the previous study on the bulbul species' feeding pattern, these species are known to regurgitate or defecate the seeds that are still intact, supporting the ecological role of the species as one of the most important seed dispersers.
[10, 11]. Ecologically, the birds' behaviour is interconnected with the food resources accessibility and the habitat suitability for their persistence in an ecosystem [12].

Considering the study site are rich with mixed vegetation between the intact forest and plantation areas, the existence of the bulbul species is inevitable. With high tolerance toward the disturbance, this generalist species habitats ranges from the forest to urban parks and even sustain in open-country habitat [13]. Frequently found in abundance near the forest edge, the number of bulbul species presented in the study areas suggests that this site can support a more significant number of frugivore species due to its high food resource availability.

The Nakawan Range that forms a border between Perlis and Thailand extended into Taman Negeri Perlis and formed the most extended continuous limestone ecosystem range in Peninsular Malaysia. Around October, these sites serve as the hotspot for the ornithologist to observe the migration courses of the birds. The birds will migrate from countries in the north region with a temperate climate, for instance, China, towards the Sumatera during winter, and the courses reversed in March [14]. In terms of status, out of 20 species of birds recently documented, 90% (18 species of birds) of them are noted as resident species, for example, *Ictiniaetus malaiensis* (Black Eagle), *Halcyon smyrnensis* (Whitethroated Kingfisher) and *Microhierax fringillarius* (Black-thighed Falconet). The other two species, namely *Corvus splendens* (Housecrow) and *Motacilla tschutschensis* (Yellow Wagtail) were noted as feral and migrant species. Resident species refers to the species that choose Malaysia's boundaries as their nesting and breeding sites. In contrast, migratory species refer to the bird species that cross the national jurisdictional boundaries along the north and south flyway passage from breeding to wintering grounds [15].

Also, feral species refer to the species accidentally released to the wild and manage to establish and sustain a breeding population out of domestication. Therefore, the low number of migratory species denoted on the recent survey might be due to the non-overlapping timeline of the study conducted and the migratory season. Nonetheless, the presence of both resident and migratory avian species represents one of the biological factors that can contribute to the ecotourism planning of the state.

Based on the Protection of Wildlife Act 2010, 65% of the recent bird species listed are totally protected, which means these species are banned from any activities involving hunting, trapping or rearing in captivity. Some of the species include the *Psilopogon cyanotis* (Blue-eared Barbet), *Psilopogon chrysopogon* (Golden-whiskered Barbet) and *Hemicircus sordidus* (Grey-and-buff Woodpecker). There are 15% of protected species listed such as *Chalcophaps indica* (Emerald Dove), *Copsychus saularis* (Oriental Magpie Robin) and *Gallus gallus* (Red Junglefowl). And the remaining 20% of the total bird species listed on the recent survey are considered as not protected namely *Geopelia striata* (Zebra Dove), *Pycnonotus goiavier* (Yellow-vented Bulbul), *Acridotheres javanicus* (Javan Myna) and *Corvus splendens* (Housecrow).

As stated in IUCN red list, *Psilopogon rafflesia* (Red-crowned Barbet) was listed as near threatened and *Acridotheres javanicus* (Javan Myna) is listed as vulnerable. Globally, *P. rafflesia* is facing rapid declination in the number of populations due to rapid deforestation and land conversion towards agricultural and development activities on the primary habitat. Although the species can sometimes be found around the rubber plantation areas, the study on tolerance and persistence of the species towards the land-use change is still lacking. On the contrary, *A. javanicus* is often found in disturbed areas mainly in open and the agricultural regions. Species, *A. javanicus* are native in Java and Bali and after been introduced it has become common in southern Peninsular Malaysia and Singapore [16]. This species is considered an invasive species because of its aggressive behavior. Nevertheless, both species are threatened due to demand from the local and international bird trade markets [17]. This trading practice poses a major threat to the conservation status of these bird species if not control in the upcoming years.
**Table 1.** Checklist of the avifauna community recorded during the short expedition in Tasik Meranti, Wang Kelian, Taman Negeri Perlis.

| No | Families      | Scientific Name          | Common Name               | |Comparison| |Status/| IUCN/| WCA|
|----|---------------|--------------------------|---------------------------|---|---------------|---|---------------|---|---------------|
| 1  | Accipitridae  | *Ictinaetus malaiensis*  | Black Eagle               | X | R, LC, TP     |   |               |   |               |
| 2  | Ardeidae      | *Butorides striata*      | Green-backed Heron        | X | R/M, LC, TP   |   |               |   |               |
| 3  | Alcedinidae   | *Halcyon smyrnensis*     | White-throated Kingfisher | X | R, LC, TP     |   |               |   |               |
| 4  | Alcedinidae   | *Ceyx erithaca*          | Oriental Dwarf-kingfisher | X | R/M, LC, TP   |   |               |   |               |
| 5  | Alcedinidae   | *Ceyx rufidorsa*         | Rufous-backed Kingfisher  | X | R, LC, TP     |   |               |   |               |
| 6  | Calyptomenidae| *Calyptomena viridis*    | Green Broadbill           | X | R, NT, TP     |   |               |   |               |
| 7  | Corvidae      | *Corvus splendens*       | Housecrow                 | X | F, LC, NP     |   |               |   |               |
| 8  | Columbidae    | *Geopelia striata*       | Zebra Dove                | X | R, LC, NP     |   |               |   |               |
| 9  | Columbidae    | *Chalcophaps indica*     | Emerald Dove              | X | R, LC, P      |   |               |   |               |
| 10 | Columbidae    | *Ducula aenea*           | Green Imperial pigeon     | X | R, LC, TP     |   |               |   |               |
| 11 | Dicruridae    | *Dicrurus macrocercus*   | Black Drongo              | X | M, LC, TP     |   |               |   |               |
| 12 | Falconidae    | *Microhierax fringillarius* | Black-thighed Falconet | X | R, LC, TP     |   |               |   |               |
| 13 | Laniidae      | *Lanius cristatus*       | Brown Shrike              | X | M, LC, TP     |   |               |   |               |
| 14 | Laniidae      | *Lanius tigrinus*        | Tiger Shrike              | X | M, LC, TP     |   |               |   |               |
| 15 | Megalaimidae  | *Psilopogon cyanotis*    | Blue-eared Barbet         | X | R, LC, TP     |   |               |   |               |
| 16 | Megalaimidae  | *Psilopogon chrysopogon* | Golden-whiskered Barbet   | X | R, LC, TP     |   |               |   |               |
| 17 | Megalaimidae  | *Psilopogon rafflesii*   | Red-crowned Barbet        | X | R, NT, TP     |   |               |   |               |
| 18 | Motacillidae  | *Motacilla tschutschensis* | Yellow Wagtail          | X | M, LC, TP     |   |               |   |               |
| 19 | Motacillidae  | *Dendronanthus indicus*  | Forest Wagtail            | X | M, LC, TP     |   |               |   |               |
| 20 | Motacillidae  | *Motacilla cinerea*      | Grey Wagtail              | X | M, LC, TP     |   |               |   |               |
| 21 | Muscicapidae  | *Copsychus saularis*     | Oriental Magpie Robin     | X | R, LC, P      |   |               |   |               |
| 22 | Muscicapidae  | *Cyanoptila cyanomelana* | Blue-and-white Flycatcher | X | M, LC, TP     |   |               |   |               |
| 23 | Muscicapidae  | *Cynornis tickelliae*    | Tickell's Blue-flycatcher | X | R/M, LC, TP   |   |               |   |               |
| 24 | Muscicapidae  | *Ficedula zanthopygia*   | Yellow-rumped Flycatcher  | X | M, LC, TP     |   |               |   |               |
| 25 | Nectariniidae | *Arachnothera flavigaster* | Spectacled Spiderhunter  | X | R, LC, TP     |   |               |   |               |
| 26 | Nectariniidae | *Arachnothera longirostra* | Little Spiderhunter       | X | R, LC, TP     |   |               |   |               |
| 27 | Nectariniidae | Arachnothera robusta | Long-billed Spiderhunter | X | R, LC, TP |
| 28 | Pellorneidae | Pellorneum nigrocapitatum | Black-capped Babbler | X | R, LC, TP |
| 29 | Pellorneidae | Trichastoma tickelli | Buff-breasted Babbler | X | R, LC, TP |
| 30 | Picidae | Hemicircus sordidus | Grey-and-buff Woodpecker | X | R, LC, TP |
| 31 | Picidae | Blythipicus rubiginosus | Maroon Woodpecker | X | R, LC, TP |
| 32 | Phasianidae | Gallus gallus | Red Junglefowl | X | R, LC, P |
| 33 | Pycnonotidae | Pycnonotus finlaysoni | Stripe-throated Bulbul | X | R, LC, TP |
| 34 | Pycnonotidae | Pycnonotus brunneus | Red-eyed Bulbul | X | R, LC, TP |
| 35 | Pycnonotidae | Pycnonotus plumosus | Olive-winged Bulbul | X | R, LC, TP |
| 36 | Pycnonotidae | Pycnonotus goiavier | Yellow-vented Bulbul | X | R, LC, NP |
| 37 | Pycnonotidae | Iole charlottae | Buff-vented Bulbul | X | R, NT, TP |
| 38 | Pycnonotidae | Pycnonotus simplex | Cream-vented Bulbul | X | R, LC, TP |
| 39 | Rallidae | Gallinula chloropus | Common Moorhen | X | R, LC, TP |
| 40 | Rhipiduridae | Rhipidura javanicus | Pied Fantail | X | R, LC, TP |
| 41 | Strigidae | Otus lettia | Collared Scops-owl | X | R, LC, TP |
| 42 | Sturnidae | Acrisotheres javanicus | Javan Myna | X | R, VU, NP |
| 43 | Timaliidae | Mixornis gularis | Pin-striped Tit-babbler | X | R, LC, TP |
| 44 | Trogonidae | Harpactes oreskios | Orange-breasted Trogon | X | R, LC, TP |
| 45 | Vangidae | Tephrodornis gularis | Large Woodshrike | X | R, LC, TP |

*Comparison: X- presented
bStatus: R- Resident, M-Migratory, R/M- Resident and migratory, F- Feral
IUCN red list status: LC- Least Concerned, VU- Vulnerable, NT- Near Threatened
Wildlife Conservation Act (2010): TP- Totally Protected, P- Protected, NP- Not Protected
4. Conclusion
In general, the data obtained from the short survey in Tasik Meranti, Wang Kelian Taman Negeri Perlis proposed that the site are still very rich in term of the avifauna community although two decades have passed. With the changes in the ecosystem landscape of the study site, a total of 40% increment of the species presented in the current study indicates that the sites have the potential of more species that need to be explored. Therefore, intensive avifauna community research covering more areas on the site is encouraged to be conducted periodically to acquire the general idea of the bird species distribution presented. Later, a management plan can be formulated to ensure the protection and conservation of this habitat for future generations.

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