

Assessment of Bird Species in Central Mindanao University, Bukidnon, Philippines

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Received: June 14, 2017 Accepted: July 7, 2017 Published: July 28, 2017

doi:10.5296/jbls.v8i2.11395 URL: <https://doi.org/10.5296/jbls.v8i2.11395>

Abstract

Birds are important indicators to determine the quality of habitat. They played an important role in maintaining the balance of our ecosystem. This study aims to determine the species of birds and its diversity within the Central Mindanao University main campus. A line transect method combined with bird watching technique were used within the two month avian survey. A total of 27 species belonging to 21 families were recorded namely, Accipitridae, Alcedinidae, Apodidae, Ardeidae, Artamidae, Bucconidae, Campephagidae, Columbidae, Corvidae, Dicaeidae, Estrildidae, Hirundinidae, Laniidae, Meropidae, Nectariniidae, Phasianidae, Pycnonotidae, Sturnidae and Sylviidae. Out of the 27 bird species observed, 18 resident, 3 resident-migrant, 5 Philippine endemic and 1 island endemic. The most observed species are Eurasian Tree Sparrow (*Passer montanus*) and followed by an introduced species which was Feral Pigeon (*Columba livia*). Most of the species observed were commonly found in urban communities, agroecosystem and along the forest edge. Some species of birds belonging to family Nectariniidae and Dicaeidae are associated in areas with flowering trees and there are seldom observed in other points. The average diversity of all points $H' = 0.94$ which is quite low and it requires more sampling effort and other technique to record silent or shy species.

Keywords: Bird survey, Bukidnon, Diversity, Birds

1. Introduction

Birds are endothermic animals that serve as biological indicator in assessing the health of a habitat. They are widely distributed depending on the type of habitat preferences, availability of food items and season. This would affect their diversity and abundance within an area. According to McIntyre (1995), a change in landscape affects the ecological characteristics as species diversity and relative abundance. This made the birds an effective indicator in demonstrating the effects of landscape change. Bird assemblages in tropical agro forest ecosystems composed of disproportionately more frugivore and nectarivorous bird species compared with forest. Meanwhile the insectivorous species are associated to the forest habitats (Tschardt et al., 2008). In agro ecosystems, the population of avian pollinators and seed dispersers during the flowering and fruiting seasons of plants and slowly declines in proportion in off season. Bird distribution patterns would also depend on the type for available food item within the area, but it depends on the forest fragment and edge pattern effects from adjacent, non-forest habitats (Barbaro et al, 2014). This study aimed to determine the bird species and its diversity in the area surrounded with a forest fragment and agro ecosystems.

2. Research Methods

2.1 Sampling Site

The avian survey was conducted in Central Mindanao University Main campus. It is located at 7.8593⁰ N and 125.0500⁰ E. It has a total land area of 3,800 hectares, surrounded with residential communities, forest patches, and pasture land and agro ecosystems (see Figure 1). A line transect was used with corresponding observation points (O1-O4) see fig. 1. Observation area 1, composed of old growth mahogany trees lined along the path. Observation area 2, consist a large open area with a small pond and a forest patch. It consists of *Pinus sp.*, old growth flowering trees and fruiting trees. Observation area 3 found in between the CMU Park and two forest fragment. The area is composed of old growth tree species like Mahogany, flowering trees and some herbaceous plants. Lastly the observation area 4, it is near the Mushroom Development Program, residential community and agricultural land. The vegetation is composed of grassland, some Mahogany tree species and *Pinus sp.*

2.2 Avian Survey and Analysis

In every point 15 minutes to 20 minutes were allotted for bird survey and 15 minutes allotted to transfer from one observation point to the other. A paired binocular was used to observe the birds and digital camera to document the birds found within the area. For identification, Field guide to Philippine birds by Kennedy et al. (2000) was used. Bird survey started from April to May of 2016 every 5:30 am to 9:00 am during high bird activity and in a fair weather condition. Diversity was computed using Biodiversity Pro to analyze the diversity of the species observed within the area.



Figure 1. Location of the study site with observation points (O1-O4) (Google Earth, 2016).

3. Results and Discussion

There are 27 species of birds belonging to 21 families as shown in Table 1 and seen in Plate 1. Among the 27 birds 18 are resident, 3 resident-migrant, 5 Philippine endemic and 1 island endemic. The most abundant birds species observed in all area are Eurasian tree sparrow (*P. montanus*), Olive-backed Sunbird (*Nectarinia jugularis*), Yellow-vented Bulbul (*Pycnonotus goiavier*) and Pacific Swallow (*Hirundo tahitica*). These birds are likely associated to their food items, like Pacific Swallows (*H. tahitica*) is closely associated to abundance of insect prey (Turner, 1983). The role of bird-insect interaction would depend on forest fragmentation, edge effects from adjacent non-forest habitats (Barbaro et al, 2014) and weather (Turner, 1983).

Table1. Bird species observed within the CMU main campus in four observation areas.

Family	Name	Status	O1	O2	O3	O4
Accipitridae	Bhraminy Kite (<i>Haliastur indus</i>)	Resident - common		3		
Alcedinidae	White Collared Kingfisher (<i>Halcyon chloris</i>)	Resident - common	2	2		2
	Variable Dwarf Kingfisher (<i>Ceyx lepidus</i>)	Min. Endemic – uncommon		1		
Apodidae	House Swift (<i>Apus affinis</i>)	Resident- locally common		5		
	Philippine Swiftlet	Endemic – common	4	4		

	<i>(Collocalia mearnsi)</i>					
Ardeidae	Cattle Egret <i>(Bubulcus ibis)</i>	Resident – Migrant		3		
Artamidae	White Breasted Wood Swallow <i>(Artamus leucorynchus)</i>	Resident - common				7
Bucconidae	Tarctic Hornbill <i>(Penelopides panini)</i>	Endemic – Fairly Common	3			
Campephagidae	Pied Triller <i>(Lalage nigra)</i>	Resident- Common			7	
Columbidae	Feral Pigeon <i>(Columba livia)</i>	Common			70	
	Reddish Cuckoo Dove <i>(Macropygia phasianella)</i>	Resident – Common	2		3	
	White-eared Brown Dove <i>(Phapiteron leucotis)</i>	Endemic – Common	1	3	2	5
	Zebra Dove <i>(Geopelia striata)</i>	Resident – Common		1	4	
Corvidae	Slender Billed Crow <i>(Corvus enca)</i>	Resident – Locally Common	1	6		1
Dicaeidae	Pgymy Flowerpecker <i>(Dicaeum pgymaeum)</i>	Endemic- common		2		
	Red-keeled Flowerpecker <i>(Dicaeum australe)</i>	Endemic – common		2		
Estrildidae	Chestnut Munia <i>(Lonchura malacca)</i>	Resident - common		18	10	7
Hirundinidae	Pacific swallow <i>(Hirundo tahitica)</i>	Resident - common	10	12	8	5
Laniidae	Brown Shrike <i>(Lanius cristatus)</i>	Migrant – Common		3		
Meropidae	Blue-throated Bee-eater <i>(Merops viridis)</i>	Resident – Fairly Common		1		
Muscicapidae	Pied Fantail <i>(Rhipidura javanica)</i>	Resident- Common		2	1	2
Nectariniidae	Olive-backed Sunbird <i>(Nectarinia jugularis)</i>	Resident – Common	10	15	17	8
Phasianidae	Red Jungle Fowl <i>(Gallus gallus)</i>	Resident – Common		20		17
Ploceidae	Eurasian Tree Sparrow <i>(Passer montanus)</i>	Resident- Common	15	40	25	25
Pycnonotidae	Yellow Vented Bulbul	Resident – Common	8	15	12	13

	(<i>Pycnonotus goiavier</i>)				
Sturnidae	Asian Glossy Starling (<i>Aplonis panayensis</i>)	Resident - Common		11	13
Sylviidae	Lanceolated Warbler (<i>Locustella ochotensis</i>)	Migrant-uncommon			2

Table 2. Diversity index of observation in each sites.

	O 1	O2	O3	O4
Shannon H' Log Base	0.857	1.09	0.858	0.948
Shannon Hmax	1	1.322	1.114	1.079
Shannon J'	0.857	0.83	0.77	0.878

In table 2 above Observation area 2 is highly diverse when compared to among other areas. O2 served as the feeding areas of most birds like the Pacific Swallow (*H. tahitica*) usually flies in areas where high density of insects especially in wet season (Turner, 1983). The birds belonging to family Nectariinidae, the Olive-backed Sunbird (*N. jugularis*) also found perching in flowering trees in open and closed canopies said to feeding on not only nectars of the flowering plants but also in small arthropods (Maher, 1996). Some granivores like the Chestnut Munia (*L. malacca*) and Eurasian Tree Sparrow (*P. montanus*) often seen grazing on grassland and build its nest in herbaceous plants within the area.

4. Conclusion, Heading Level-1.

The distribution and diversity of bird species was affected by the structure of the habitat, the type of food item and the abundance of the food item, and time. Most birds were highly active early morning decreases in mid-afternoon and back to increase in late afternoon. Some birds have wide range of food items which tends to dominant in proportion when compared to selective birds.

Acknowledgement

The researchers would like to thank Abdel Muamar Disomimba for the assistance in bird sampling.

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