

Checklist of Bird Species in Mandalay University Campus

San San Myint¹, Nwet Nwet Win², Sai Sein Lin Oo³, Win Win Nu⁴, Zin May Khaing⁵,
Aye Aye Moe⁶, Kyaw Htet Kaung⁷, Khaing Thazin Win⁷, Thant Zin⁸

Abstract

A total of 36 bird species belonging to 26 families and 11 orders were recorded from Mandalay University Campus during the study period from June 2017 to May 2018. Among them, 34 species were terrestrial birds and two species were waterbirds. Of these, 11 orders, Passeriformes was the largest order containing 20 species (55.56%) and followed by order Columbiformes and Coraciiformes containing three species in each (8.33%), Psittaciformes and Cuculiformes, two species in each (5.56%), Anseriformes, Accipitriformes, Gruiformes, Strigiformes, Caprimulgiformes and Piciformes one species in each (2.78%), respectively. Two Myanmar's endemic species of *Pycnonotus blanfordi* (Irrawaddy Bulbul) and *Turdoides gularis* (White-throated Babbler) were recorded in the Mandalay University Campus. Of these 36 species, two Winter Visitors of *Lanius cristatus* (Brown Shrike) and *Motacilla alba* (White Wagtail), one Near Threatened species of *Psittacula eupatria* (Alexandrine Parakeet), three migrant species of *P. eupatria* (Alexandrine Parakeet), *Upupa epops* (Common Hoopoe) and *Passer flaveolus* (Plain-backed Sparrow), and 26 residents species were recorded in the Mandalay University Campus. It is proof that Mandalay University Campus is a good habitat for long-term survival of birds including terrestrial and waterbirds.

Key words: Terrestrial birds, waterbirds, winter visitor, resident, migrant and Mandalay University Campus

Introduction

Birds play important ecological roles: they regulate forest insect populations, are essential seed dispersal agents and are indicators of forest health and ecosystem integrity (Sekercioglu *et al.*, 2004).

Birds are found in forests, wetland, deserts, mountains, prairies and over all the oceans. Although they are found in various parts of the world they are not seen all the time because of their migratory habit (Davison and Fook, 1996).

There are approximately 10000 bird species. The Class Aves comprises almost 10,000 recognized species of varied forms descended from one another through the process of adaptation by natural selection. The current classification of living birds is a hierarchical arrangement of roughly 29 orders, 187 families, over 2000 genera, and over 9600 species (Gill, 2001). In Southeast Asia, a total of 1327 species are known to occur (Robson, 2015). About 2,585 bird species were recorded in Southeast Asia and 1,077 bird species occur in Myanmar (Avibase, 2015)

Water birds are a large and varied group of birds. Most are exclusive to fresh water such as rivers, lakes, dams and wetlands, however many sea and shore birds can also be regularly found in fresh water, e.g. cormorants and many migratory waders. Ibis and herons,

¹ Professor, Dr, Department of Zoology, University of Mandalay

² Associate Professor, Dr, Department of Zoology, Kalay University

³ Associate Professor, Dr, Department of Zoology, Kengtung University

⁴ Lecturer, Dr. Department of Zoology, Monywa University

⁵ Lecturer, Dr., Department of Zoology, University of Mandalay

⁶ Lecturer, Dr., Department of Zoology, Panglong University

⁷ Lecturer, Department of Zoology, University of Mandalay

⁸ Professor and Head, Dr, Department of Zoology, University of Mandalay

which have sharp pointed beaks, feed on small fish, worms, bugs, crustaceans, flogs and even field mice (Birdlife Australia, 2008)

Mandalay University is situated in the center of Mandalay, surrounded by residential areas but with diverse landscapes. It has a rich of safety habitats providing sanctuary for bird species including terrestrial also waterbirds and few studies have been made of bird species in Mandalay University Campus. These are the reasons for choice of this current study in Mandalay University Campus. So Mandalay University was chosen as the study area with the objective of to identify, record and list of the bird species in Mandalay University Campus and to provide information about the variety of bird species including residents, winter visitors, migrants, terrestrial and waterbirds in Mandalay University.

Materials and Methods

Study Area

Study area of Mandalay University is situated in the center of Mandalay City, surrounded by residential area and located between $21^{\circ}57'16.6''$ and $21^{\circ}57'18.3''$ N, $96^{\circ}5'40.1''$ and $96^{\circ}5'45.3''$ E (Fig. 1). This area is teemed with large buildings, large and old trees, bushy areas, inundated areas, shrubs, grassland, human habitations and water drainages.

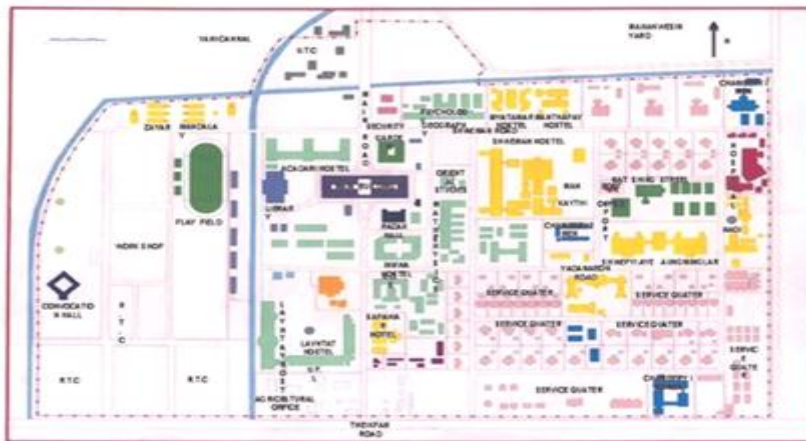


Fig. 1 Map of Mandalay University Campus

Collection of Data

Collection of data was conducted point count method in the study area, followed by (Bibby *et al.*, 2000). Birds were viewed with binocular and photos were taken with a Nikon digital camera (Nikon P-900) after sighting the birds. Data collection was done in the morning (7:00 - 10:00 am) and evening (3:00 - 6:00 pm). Point count includes a standing one spot and recording all the number of birds per species sighted, perching on trees flying overhead and bear at either fixed or unlimited distance within 15 minutes. Twenty points were set within Study area, 150 m apart were allocated and the birds observed within the visible distance were recorded. Bird species were firstly viewed by a binocular (Nicula, 5×7), sometimes by power of seeing and immediately taken on photographs by using Nikon coolpix P 510 42×. Data collection was carried out once a week. Then, photographs were identified for bird species according to Ornithological references.

Results

A total of 36 bird species belonging to 26 families and 11 orders were recorded from Mandalay University Campus during the study period from June 2017 to May 2018. Among them, 34 species were terrestrial birds and two species were waterbirds (Table 1 and 2, Plate 1).

Of these, 11 orders, Passeriformes was the largest order containing 20 species (55.56%) and followed by order Columbiformes and Coraciiformes containing three species in each (8.33%), Psittaciformes and Cuculiformes, two species in each (5.56%), Anseriformes, Accipitriformes, Gruiformes, Strigiformes, Caprimulgiformes and Piciformes one species in each (2.78%), respectively. (Table 1 and 2, Fig. 2)

Two Myanmar's endemic species of *Pycnonotus blanfordi* (Irrawaddy Bulbul) and *Turdoides gularis* (White-throated Babbler) were recorded in the Mandalay University Campus. Of these 31 species, one winter visitor of *Lanius cristatus* (Brown Shrike), one Near Threatened species of *Psittacula eupatria* (Alexandrine Parakeet), three migrant species of *P. eupatria* (Alexandrine Parakeet), *Upupa epops* (Common Hoopoe) and *Passer flaveolus* (Plain-backed Sparrow) and 27 residents species were recorded in the Mandalay University Campus. It is proof that Mandalay University Campus is a good habitat for the long-term survival of birds including terrestrial and waterbirds. (Table 1 and 2)

Recorded bird species

***Ardeola bacchus* (Bonaparte, 1855)**

East Asia freshwater birds. It is found in shallow fresh and salt water wetlands, marshes, river side, roadside ditches, also mangroves and tidal pools, up to 1,600m. Common winter visitor. Locally resident. This photo was taken at the marshy area to the east of Mandalay University Campus. Conservation status is least concern. (Plate 1 A)

***Accipiter badius* Gmelin, 1788**

The Shikra is a small bird of prey found in a range of habitats including forests, farmland, deciduous, open broadleaved evergreen, mixed broadleaved and coniferous forest, open area, urban areas, cultivation; up to 1,600 m. It is a common resident to Myanmar. Conservation status is least concern. (Plate 1 B)

***Amaurornis phoenicurus* (Pennant, 1769)**

It is a water bird. They are found in marshes, mangrove edges, paddy fields, also on canals, even drains and near busy roads. Sometimes it can be seen far from water. They fly weakly with legs trailing. In Mandalay University, they can be seen walking among tall grasses at roadsides or drainage canals and swampy vegetations. Common resident in Myanmar. Conservation status is least concern. This photo was taken at the eastern part of the Campus. (Plate 1 C)

***Columba livia* (Gmelin, 1789)**

Columba livia is native to Europe and has been introduced worldwide as a food source or for game. They inhabit cliffs, ruins, groves in open and cultivated places, urban areas; up to 1,450m. This pigeon prefers to live near human habitation, such as farmland and buildings. Common resident in Myanmar. Easily found in Mandalay University Campus. Conservation status is least concern. (Plate 1 D)

***Streptopelia chinensis* (Scopoli, 1768)**

The spotted dove in its native range in Asia is found across a range of habitats including woodland, scrub, farmland and human habitation. Locally common resident to Myanmar. It is chiefly a dry zone bird. Normally solitary or in small groups. The bird is found everywhere around Mandalay University Campus. Conservation status is least concern. (Plate 1 E)

***Treron phoenicopterus* (Latham, 1790)**

Beautiful birds. They inhabit mix deciduous forests, secondary growth; lowlands, sometime up to 1,220 m. It is a common resident bird. The bird is often seen sunning at the tops of emergent trees in dense forest areas. Commonly found in Banyan tree. Conservation status is least concern. (Plate 1 F)

***Psittacula eupatria* (Linnaeus, 1766)**

They inhabit forests, orchards, cultivated areas, towns, plains and Indaing forests below 3,000 feet. Resident to Myanmar. It is popular caged-bird, learning to imitate some notes and human words. This is mostly due to loss of habitat (cutting of old trees), excessive poaching of wild chicks and illegal to pet trade. Conservation status is near threatened. (Plate 1 G)

***Psittacula krameri* (Linnaeus, 1766)**

These gregarious tropical parakeets are popular in the pet industry. These beautiful and elegant birds are considered one of the best talking parakeets and can learn a vocabulary of up to 250 words. Locally common Resident Myanmar (except northern and Tenasserian). Conservation status is least concern. (Plate 1 H)

***Cacomantis merulinus* (Scopoli, 1786)**

Summer visitor. The plaintive cuckoo inhabits forest edge, open woodland, scrub, grassland, farmland, parks and gardens up to 18,30 m. It is a brood parasite. Common resident throughout south East Asia. Mostly shy and arboreal. Difficult to see them. Conservation status is least concern. (Plate 1 I)

***Eudynamys scolopaceus* (Linnaeus, 1758)**

Found in open woodland, secondary growth, scrub, cultivated areas, parks and gardens; up to 1,220 m. Seldom seen hides in thick foliage of tall trees. Earliest calls heard in February, silent during the rains and after. Brood parasitic. In summer and rainy season, they are found solitary or in pairs on tall trees along U Pon Nya and U Yin Streets. Fairly common to common resident. Conservation status is least concern. (Plate 1 J)

***Athene brama* (Temminck, 1821)**

Generally nocturnal, roosting by day, so hard to observe. They inhabit open woodland, semi-desert, cultivation, gardens, buildings, urban areas; up to 1220 m. Common resident in Myanmar. Found frequently in rain trees in front of Academy building, Shwe Man Hostel compound. Conservation status is least concern. (Plate 1 K)

***Caprimulgus macrurus* (Horsfield, 1821)**

Its natural habitats are subtropical or tropical mangroves, forest and subtropical or tropical moist montane forests. Found in teak and hill forests, open wooded areas, scrub and cultivations up to 2,565 m (breed above 600 m). Common resident. It is a nocturnal bird. Conservation status is least concern. (Plate 1 L)

***Coracias benghalensis* (Linnaeus, 1758)**

Found in open country urban areas, semi-desert, cultivation; up to 1525 m common resident. They are often seen perched on roadside trees and wires. Usually solitary or in pairs. Mainly active in mornings and evenings. Several states in India have chosen it as their state bird. Conservation status is least concern. This photo was taken at the corner of U Yin Street and Thitsar Street near the Zoological Garden. (Plate 1 M)

***Merops orientalis* (Latham, 1802)**

Found in drier open country, cultivations, semi-desert beach slacks and dunes; up to 1,600 m. Common resident. They can be seen everywhere around the campus. Conservation status is least concern. (Plate 1 N)

***Upupa epops* Linnaeus, 1758**

It is a colourful bird, notable for its distinctive crown of feather. The hoopoe is the national bird of Israel. Found in cultivated country, Grassy lawns, dry bamboo jungle, open woodland, scrub, gardens; up to 1,525m. The hoopoe has two basic requirements of its habitat: bare or lightly vegetated ground on which to forage. Scarce to uncommon winter visitor Hoopoes enjoy taking dust and sand baths. Conservation status is least concern. (Plate 1 O)

***Megalaima haemacephala* Statius Muller, 1776**

Coppersmith barbet known for its metronomic call that has been likened to a coppersmith striking metal with a hammer. They are found deciduous forest, forest edge, mangroves, scattered trees in open areas, parks and gardens, plantations; up to 915m. Habitats with trees having dead wood suitable for excavation. Common resident. Conservation status is least concern. (Plate 1 P)

***Dicrurus macrocercus* (Vieillot, 1817)**

Black drongo is found in open country, cultivations, roadsides, scrubs; up to 1,220 m. Common resident, mostly in lowlands. Often seen in association with domestic cattles. Found in pairs everywhere in the Campus especially around Ruby Cafe compound. Conservation status is least concern. (Plate 1 Q)

***Corvus splendens* (Vieillot, 1817)**

Open and urban areas, cultivation; up to 1,525 m. Roosts communally. Common resident in Myanmar. It is of Asian origin but now found in many parts of the world, where they arrived assisted by shipping. It is associated with human settlements throughout. Its range from small village to cities. House Crow roosts communally near human habitations and often over busy streets. Conservation status is least concern. (Plate 1 R)

***Aegithina tiphia* (Linnaeus, 1758)**

It is easily detected from its loud whistles and the bright color. A species found in scrub, cultivated areas and gardens except the deep forest. Common resident. (Plate 1 S)

***Lanius cristatus* (Linnaeus, 1758)**

This species has a distinctive black “bandit-mask” through the eyes and is found mainly in open scrub habitats, where it perches on the tops of thorny bushes in such of prey. They inhabit open country cultivation gardens secondary growth, forest edge; up to 2,000 m (mainly lowland). Winter visitor. Conservation status is least concern. (Plate 1 T)

***Cinnyris asiatica* (Latham, 1790)**

They feed mainly on nectar. They distributed resident birds. They are found mainly on the plains. They inhabit deciduous woodland, bushy semi-desert, coastal scrub, cultivation; up to 1,525m. Common resident in Myanmar. Conservation status is least concern. (Plate 1 U)

***Lonchura punctulaata* (Linnaeus, 1758)**

Endemic to Asia. They are found mainly on the plains, but are usually close to water and grassland, paddy fields, scrub, secondary growth; up to 1,915 m. Usually in flocks. Common resident. Conservation status is least concern. (Plate 1 V)

***Dicaeum cruentatum* (Linnaeus, 1758)**

It is found in wooded areas and up to 1000 m (3500ft) in subtropical or tropical moist low land forests and occasionally gardens in number of countries throughout South and East Asia. Conservation status is least concern. (Plate 1 W)

***Passer domesticus* (Linnaeus 1758)**

Found in most parts of the world. The house sparrow is strongly associated with human habitations and can live in urban or rural settings. Though found in widely varied habitats and climates, it typically avoids extensive woodlands, grasslands, and deserts away from human development. It is common and resident in Myanmar. (Plate 1 X)

***Passer flaveolus* Blyth, 1844**

It is found in Asian countries of Myanmar, Thailand, Peninsular, Malaysia, Cambodia, Laos and Vietnam. They inhabit open woodland, costal scrub, dry open areas and cultivation, merging of human habitation; up to 1,525 m. Conservation status is least concern. (Plate 1 Y)

***Motacilla alba* (Linnaeus, 1758)**

This species breeds in much of Europe and Asia and parts of North Africa. It prefers bare areas for feeding. The white wagtail is the national bird of Latvia. This species is evaluated to be of least concern. Open country with short vegetation, frequently near water, stream sides, river banks, sea coasts. (Plate 1 Z)

***Acridotheres grandis* (Moore, 1858)**

This species has an extremely large range, and hence does not approach the thresholds for vulnerable under the range size criterion. Common resident in Myanmar. (Plate 1 AA)

***Acridotheres tristis* (Linnaeus, 1766)**

They inhabit open areas, scrub, cultivation, urban areas; up to 1,525 m. Common resident. Common resident in Myanmar. (Plate 1 BB)

***Acridotheres burmannicus* (Jerdon, 1862)**

Endemic to Asia. They inhabit se-mi desert, dry open country, scrub, cultivation, large forest clearing; up to 1,500m. Common resident Myanmar. Conservation status is least concern. (Plate 1 CC)

***Copsychus saularis* (Scopoli, 1788)**

Easily adapt to human environments and can be seen hopping around on lawns and perching conspicuously in city parks and gardens; they also occur near villages, in farmland, marshes and mangroves; up to 1,830m. Found everywhere in the Campus. (Plate 1 DD)

***Copsychus malabaricus* (Scopoli, 1788)**

Found in broadleaved evergreen and mixed deciduous forests, secondary growth, bamboo; up to 1,525 m. Common resident. Their popularity as cage birds. They are frequently found near Shwe Mann, Mya Ta Mar, Man-Tha-Pyay and Aung Mingalar Hostels. Conversation status is least concern. (Plate 1 EE)

***Pycnonotus blanfordi* (Jerdon, 1862)**

A species of songbird in the Pycnonotidae family. Its natural habitat is subtropical or tropical moist low land forest. Endemic to Myanmar, Thailand, North Peninsular Malaysia, Cambodia, Laos, Cochinchina. Common resident to Myanmar (except North). Conservation status is least concern. (Plate 1 FF)

***Pycnonotus cafer* (Linnaeus, 1766)**

A well-known bird. It is a resident breeder to Myanmar (except Tenasserim). They inhabit dry scrubs, semi desert, open forests, plains and cultivated lands, rarely found in mature forests; up to 1,910 m. They prefer dry low land region. Conservation status is least concern. (Plate 1 GG)

***Turdoides gularis* (Blyth, 1855)**

This species endemic and common resident in Central, South Myanmar, only occur in flocks. They inhabit scrub and bushes in semi-desert, borders of cultivation; up to 600 m. Conservation status is least concern. (Plate 1 HH)

***Prinia inornata* (Sykes, 1832)**

It is a resident breeder and can be found throughout Southeast Asia. They like to stay where there are long grass, crops, reeds and mangroves. Typically found in wet lowland, grassland, open woodland, scrub and sometimes gardens. Common resident. Conservation status is least concern. (Plate 1 II)

***Orthotomus sautorious* (Peannat, 1769)**

Common Tailorbird is a songbird found across tropical Asia. It is a common resident. This passerine bird is typically found in open farmland, scrub, forest edges and urban gardens. It can be found up to 1600 meters. It is lives in deciduous forests, scrublands, mangroves, open woodlands and gardens. Conservation status is least concern. (Plate 1 JJ)

Table 1 List of bird species recorded in Mandalay University Campus

Order	Family	Scientific name	Common name	Vernacular name
Anseriformes	Ardeidae	<i>Ardeola bacchus</i> *	Chinese Pond Heron	Byaing-auk
Accipitriformes	Accipitridae	<i>Accipiter badius</i>	Shikra	Gyo-Thein, Thein
Gruiformes	Rallidae	<i>Amaurornis phoenicurus</i> *	White-breasted Waterhen	Yae-kyat-yin-phyu
Columbiformes	Columbidae	<i>Columba livia</i>	Rock Pigeon	Kho
		<i>Streptopelia chinensis</i>	Spotted Dove	Gyo-le-pyauk
		<i>Treron phoenicopterus</i>	Yellow –footed Green Pigeon	Bone-Ma-Tee
Psittaciformes	Psittacidae	<i>Psittacula eupatria</i>	Alexandrine Parakeet	Kyae- phound- kar, kyat- taw
		<i>Psittacula krameri</i>	Rose-ringed Parakeet	Kyae-kyoke
Cuculiformes	Cuculidae	<i>Cacomantis merulinus</i>	PlaintiveCucukoo	
		<i>Eudynamys scolopaceus</i>	Asian Koel	Oak-aw
Strigiformes	Strigidae	<i>Athene brama</i>	Spotted Owlet	Zi-gwet
Caprimulgiformes	Caprimulgidae	<i>Caprimulgus macrurus</i>	Large-tailed Nightjar, Graveyard Nightjar, Lazy bird	Myay-wut-hnget, Hnget-pyin
Coraciiformes	Coraciidae	<i>Coracias benghalensis</i>	Indian Roller	Hnget-Khar
	Meropidae	<i>Merops orientalis</i>	Little Green Bee-eater	Hnget-pa-zin-htoe
	Upupidae	<i>Upupa epops</i>	Common Hoopoe	Bi-daung-poe, Taung -pi-sue
Piciformes	Megalaimidae	<i>Megalaima haemacephla</i>	Coppersmith Barbet	Hnget-pa-taine
Passeriformes	Dicruridae	<i>Dicrurus macrocercus</i>	Black Drongo	Lin-mee-swe, Hnegt-taw

Table 1 Continued

Order	Family	Scientific name	Common name	Vernacular name
	Corvidae	<i>Corvus splendens</i>	House Crow	Kyi-kan
	Aegithinidae	<i>Aegithina tiphia</i>	Common Iora	Shwe-Pyi-Soe
	Laniidae	<i>Lanius cristatus</i>	Brown Shrike	Hnget-Belu
	Nectariniidae	<i>Cinnyris asiaticus</i>	Purple sunbird	Wit-ye-soak-hnget
	Estrilidae	<i>Lonchura punctulata</i>	Scaly-breasted munia	Sar-Wa-Ti
	Dicaeidae	<i>Dicaeum cruentatum</i>	Scarlet-backed Flowerpecker	
	Passeridae	<i>Passer domesticus</i>	House sparrow	Eain-Sar
		<i>P. flaveolus</i>	Plain-backed Sparrow	Bago-Sar, Sar-War
	Motacillidae	<i>Motacilla alba</i>	White Wegtail	Me-Nyaunt Hnget
	Sturnidae	<i>Acridotheres grandis</i>	White-vented Myna, Great Myna	Ze-yet
		<i>Acridotheres tristis</i>	Common Myna, Indian Myna	Ze-yet
		<i>Acridotheres burmannicus</i>	Vinous-breasted myna	Zayet-Gaung-Phyu
	Muscicapidae	<i>Copsychus saularis</i>	Oriental Magpie Robin	Tha-paik-lwe
		<i>Copsychus malabaricus</i>	White-rumped Shama	Taw-thar-tha-paik-lwe
	Pycnonotidae	<i>Pycnonotus blanfordi</i>	Streak-eared bulbul, Irrawaddy bulbul	Bhut-Sa-Mwe, Bhut-chwe
		<i>P. cafer</i>	Red-vented bulbul	Bhut-phin-ni
	Timalidae	<i>Turdoides gularis</i>	White-throated babbler	Zwe, Hnget-mii-shay
	Cisticolidae	<i>Prinia innornata</i>	Plain Prinia	Hnget-let-ma
		<i>Orthotomus sutorius</i>	Common tailorbird	Hnan-pyi-soak

* = Waterbirds

Table 2 List of bird species recorded in Mandalay University Campus with their status

Sr. No.	Scientific name	Common name	IUCN Status	Residential Status
1	<i>Ardeola bacchus</i>	Chinese Pond Heron	LC	R
2	<i>Accipiter badius</i>	Shikra	LC	R
3	<i>Amaurornis phoenicurus</i>	White-breasted Waterhen	LC	R
4	<i>Columba livia</i>	Rock Pigeon	LC	R
5	<i>Streptopelia chinensis</i>	Spotted Dove	LC	R
6	<i>Treron phoenicopterus</i>	Yellow-footed Green Pigeon	LC	R
7	<i>Psittacula eupatria</i>	Alexandrine Parakeet	NT	M
8	<i>Psittacula krameri</i>	Rose-ringed Parakeet	LC	R
9	<i>Cacomantis merulinus</i>	Plaintive Cucukoo	LC	R
10	<i>Eudynamys scolopaceus</i>	Asian Koel	LC	R
11	<i>Athene brama</i>	Spotted Owlet	LC	R
12	<i>Caprimulgus macrurus</i>	Large-tailed Nightjar, Graveyard Nightjar, Lazy bird	LC	R
13	<i>Coracias benghalensis</i>	Indian Roller	LC	R
14	<i>Merops orientalis</i>	Little Green Bee-eater	LC	R
15	<i>Upupa epops</i>	Common Hoopoe	LC	M
16	<i>Megalaima haemacephla</i>	Coppersmith Barbet	LC	R
17	<i>Dicrurus macrocercus</i>	Black Drongo	LC	R
18	<i>Corvus splendens</i>	House Crow	LC	R
19	<i>Aegithina tiphia</i>	Common Iora	LC	R
20	<i>Lanius cristatus</i>	Brown Shrike	LC	W V
21	<i>Cinnyris asiaticus</i>	Purple Sunbird	LC	R
22	<i>Lonchura punctulata</i>	Scaly-Breasted Munia	LC	R
23	<i>Dicaeum cruentatum</i>	Scrlot-Backed Flowerpecker	LC	R
24	<i>Passer domesticus</i>	House Sparrow	LC	R
25	<i>P. flaveolus</i>	Plain-Backed Sparrow	LC	M
26	<i>Motacilla alba</i>	White Wegtail	LC	WV
27	<i>Acridotheres grandis</i>	White- vented Myna, Great Myna	LC	R
28	<i>Acridotheres tristis</i>	Common Myna, Indian Myna	LC	R
29	<i>Acredotheres burmannicus</i>	Venous-Breasted Myna	LC	R
30	<i>Copsychus saularis</i>	Oriental Magpie Robin	LC	R
31	<i>Copsychus malabaricus</i>	White-Rumped Shama	LC	R
32	<i>Pycnonotus blanfordi</i>	Irrawaddy bulbul	LC	R
33	<i>P. cafer</i>	Red-vented bulbul	LC	R
34	<i>Turdoides gularis</i>	White-throated babbler	LC	R
35	<i>Prinia innornata</i>	Plain Prinia	LC	R
36	<i>Orthotomus sutorius</i>	Common tailorbird	LC	R

M=Migrant; WV=Winter Visitor; R=Resident; LC=Least concern; NT=Near threaten

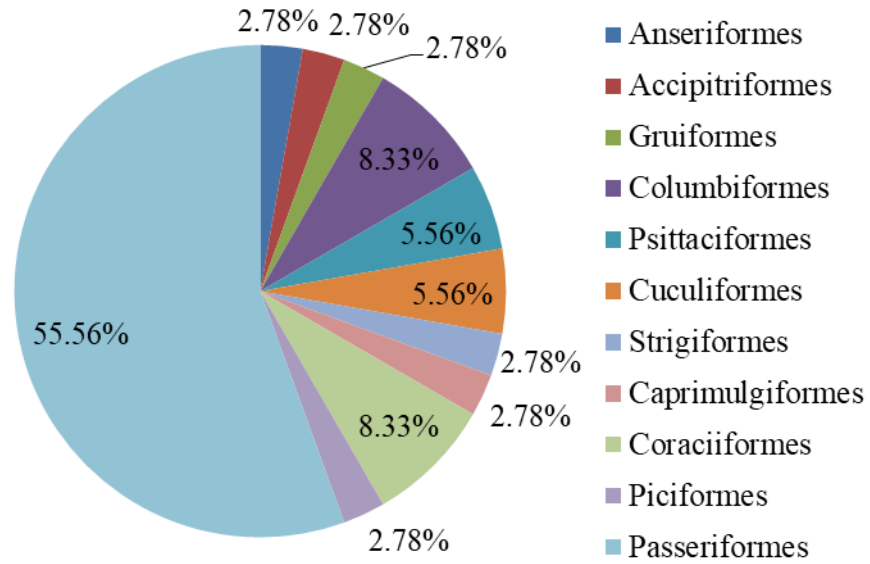


Fig. 2 Percentage species composition in different study sites



A. *Ardeola bacchus*



B. *Accipiter badius*



C. *Amaurornis phoenicurus*



D. *Columba livia*



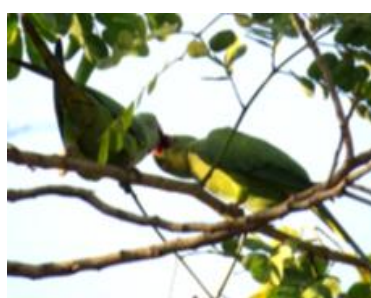
E. *Streptopelia chinensis*



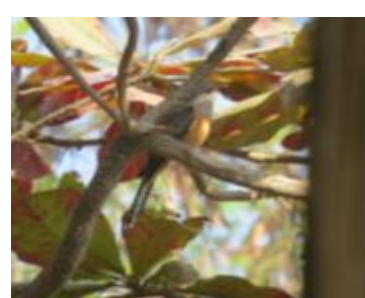
F. *Treron phoenicopterus*



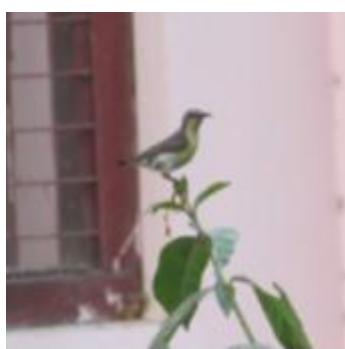
G. *Psittacula eupatria*



H. *P. krameri*



I. *Cacomantis merulinus*

J. *Eudynamys scolopaceus*K. *Athene brama*L. *Caprimulgus macrurus*M. *Coracias benghalensis*N. *Merops orientalis*O. *Upupa epops*P. *Megalaima haemacephala*Q. *Dicrurus macrocercus*R. *Corvus splendens*S. *Aegithina tiphia*T. *Lanius cristatus*U. *Cinnyris asiatica*V. *Lonchura punctulaata*W. *Dicaeum cruentatum*X. *Passer domesticus*

Y. *Passer flaveolus*Z. *Motacilla alba*AA. *Acridotheres grandis*BB. *A. tristis*CC. *A. burmannicus*DD. *Copsychus saularis*EE. *C. malabaricus*FF. *Pycnonotus blanfordi*GG. *P. cafer*HH. *Turdoides gularis*II. *Prinia inornata*JJ. *Orthotomus sautorius*

Plate 1 Recorded bird species in Mandalay University Campus

Discussion

Birds are very important to the balance of nature; by consuming insects, many birds help in keeping insects from becoming too numerous, and some kinds of birds help plants reproduce by carrying pollen from one plant to another or by spreading their seed. This research highlights the status and occurrence of bird species of resident, migrant, and winter visitors in Mandalay University from June 2017 to May 2018.

Many factors have been shown to influence bird populations including geographic locations, habitat condition in nesting, wintering areas and climatic factors (Nilsson, 1978). Climate is an important determinant of geographical range for many bird species. Climate change has been shown to affect the distribution and or abundance of birds (McCarty, 2001).

During this study period, two Winter Visitors of *Lanius cristatus* (Brown Shrike) and *Motacilla alba* (White Wagtail), one Near Threatened species of *Psittacula eupatria* (Alexandrine Parakeet), three migrant species of *P. eupatria* (Alexandrine Parakeet),

Upupa epops (Common Hoopoe) and *Passer flaveolus* (Plain-backed Sparrow) at University of Mandalay Campus. These findings indicated this area had availability of food resources and good healthy habitat conditions. Therefore, this study area is very important for future bird's conservation because its location is center of Mandalay City but many resident terrestrial bird species, and two waterbird species occur in this study area.

Acknowledgements

We wish to express our gratitude to Ministry of Education, Department of Higher Education (Upper Myanmar) for performing this paper session. Our thanks go to Dr Thein Win, Director General, Department of Higher Education, and Ministry of Education. Dr Kay Thi Thin, Dr Myin Zu Minn and Dr Mi Mi Gyi, Pro-Rectors, University of Mandalay, Dr Thant Zin, Professor, Head of Department of Zoology, University of Mandalay for their advice.

References

- Avibase (internet). The world bird database, Myanmar bird checklist, Avibase, Bird checklists of the world, 2015. Available from <http://avibase.bseec.org/checklist.jsp?region=mm&list=howard> (accessed 16 October 2015).
- Avibase, 2017. *Bird Checklists of the World Myanmar*, BirdLife International. Canada.
- Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S., 2000. *Bird Census Techniques* (2nd edition). Academic Press, London.
- Davison, G.W.H., Fook, C.Y., 1996. *A Photographic Guide to Birds of Borneo*. New Holland Publishers Ltd. ISBN 10: 1853685127/ ISBN 13: 9781853685125
- Gill, F.G., 2001. *Ornithology*. 1st ed. W.H. Freeman and Company, New York. 766 pp.
- IUCN Red List, 2017. International Union of Conservation of Nature, 2017.
- McCarty, J.P., 2001. Ecological consequence of recent climate change. *Conservation Biology*, 15: 320-331
- Nilason, S.G. and Nilason, I.N., 1978. Breeding bird community densities and species richness in lakes. *Oikos* 31: 214. 21.
- Ntongani, W.A., Andrew, S.M., 2013. Bird species composition and diversity in habitats with different disturbance histories at Kilombero Wetland, Tanzania. *Open Journal of Ecology*, 3(7).
- Robson, C., 2015. *Birds of South-east Asia*. New Holland. Publishers (UK) Ltd. 304 pp.
- Sekercioglu, C.H., Daily, G.C. and Ehrlich, P.R., 2004. Ecosystem consequences of bird declines. *Proceeding of National Academy of Sciences*, 101(52):18042-7
- Smythies, B.E., 2001. *The Birds of Burma*, 4th ed. Natural History Publications (Borneo) Edn. Bhd. 606 pp.