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Composition of bird species in bagan environs, Myanmar

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Abstract
Bagan environs were the study area to document the composition of birds. Bird watching was conductedby point count method. A total of 48 bird species was recorded in the 41 genera, 30 families distributed among nine orders. Of these, six water bird species included in three families under two orders and 42 terrestrial bird species confirmed to 27 families distributed among seven orders were recorded during the study period (June, 2016 to May, 2017). The highest number of species composition was observed to be order Passeriformes (62.50%) and followed by orders: Ciconiiformes (10.42%), Coraciiformes (8.34%), Cuculiformes (6.25%), Strigiformes (4.17%), Anseriformes (2.08%), Pelecaniformes (2.08%), Falconiformes (2.08%) and Psittaciformes (2.08%). Systematic positions of 48 recorded bird species with distinctive characters and respective photographs were presented. This research may be useful as baseline information to account the bird species of Bagan environs.

Keywords: composition, bird species, bagan

1. Introduction

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 [1]. In south East Asia, a total of 1327 species are known to occur[2].Myanmar contains a rich and diverse avifauna, amounting to more than 1027 species[3]. Birds are distributed nearly the entire world in the vast numbers than all other vertebrates except the fishes [4].

Birds are found in forests, wetland, deserts, mountains, prairies, and over all the oceans. Although they found in various parts of the world, they are not seen all the time because of their migratory habit. Besides, bird populations can be expressed in terms of density of a species per unit area. Bird populations vary in size from year to year. Occasionally, the activities of people such as urbanization, deforestation, manmade pollution and environmental deformation, caused the loss of habitats of birds [5].

Birds are among the easiest of animal to census. They are very popular, with the result that high - quality field guides are available in most parts of the world and there are professional and amateurs with a high level of identification skills. Their spectacular color,shape and voice appeal to human eyes[6]. Birds are familiar features of our environment and everyone notices them. Now days, bird watching is very popular [7].

Birds are the most popular groups of animals than other animals.Onithologists recorded nearly ten thousand living bird species in the world (2008) and estimated that fewer than hundred others, of limited range in the remote regions remain undiscovered(Wetmore, 1973).. Birds are known as good indicators, and can be used to identify the most biologically rich area,as well as environmental changes and problems. Studying birds can tell us about the habitats on which all depend,and the less of Asia's threatened birds is a measure of a more general deterioration in their biodiversity and the natural environment [8].Birds are taxonomically well – known and stable,and their populations are readily surveyed and manipulated. Birds are widespread, occurring almost everywhere in the world. Birds are mobile and responsive to environmental changes [9]. Birds are the best monitors of environmental changes and have been used to evaluate throughout the history as 'bio-monitors [10].

Myanmar is a small part the oriental region, but because of its favorable situation, with its head near the Himalayas and its tail extending down to Malaysia; it has one of the richest avifauna. Myanmar can justifiably claim, in round numbers, 1000 avian species. The avifauna of Myanmar is never stationary with the changing of the season birds that summers in northern latitudes are unable to find food in those latitudes in winter; it therefore moves southwards to an area that time and circumstances have fixed as its winter quarters [11].

Myanmar support one of the richest and most diverse bird communities in main land Southeast-Asia Myanmar, because of its unique geographical location and climate conditions, assumed to be richly endowed with avian fauna , about 1,035 species recorded in 2001 [12].Myanmar is best for different migratory birds including summer migrants and winter migrants. Annually, many thousands of birds come to Myanmar to avoid bad weather condition in their native places for continued existence of species in the earth. Many wet lands are important wintering grounds for migratory birds. It is needed to assess the distribution and status of birds relating to a variety of habitats in many areas of Myanmar. The scope of the present study was to conduct the extensive survey of avian fauna in Bagan and its environs.

2. Materials and methods

Bagan is an included in the NyaungU Township , situated between 21° 10 ' N - 2 1° 16' N and between 94° 52' E - 94° 86' E. Bagan lies on the east bank of Ayeyarwady River in the dry zone of Central Myanmar. Its area is about 104 km^2. Four study sites were habitat based chosen: Site I (Sulamani Temple), Site II (Htilominlo Temple, Site III (Mingalazedi Pagoda) and Site IV (Lawkanandar Wildlife Sanctuary).Observation of birds was conducted from June, 2016 to May, 2017.

2.1 Data collection and identification

Study area was visited fouronetime per month. The data collection was made using point count method. Reasonable number of data collection points was allocated around the pagodas to cover the whole study area. The minimum distance between two points was 250 m away. Point count involved standing in one spot and recorded all the birds seen or heard at a fixed distance of 50m radius for 10 minutes. To minimize the disturbances during the count, waiting period of three to five minutes prior to counting was applied. The birds were viewed with a pair of binoculars and photographic records were made with digital camera. All counts were conducted during the first three hours after sunrise.Identification of birds was followed after Smythies [11], Strang e[13], KyawNyuntLwin and Khin Ma MaThwin[12] and Robson [2].

2.2 Data analysis

Species compositions were analyzed following after Bisht*et al.* 2004.

$$\text{Species composition} = \frac{\text{Number of particular species}}{\text{Total number of species}} \times 100$$

3. Results

A total of 48 bird species, belonging to 41 genera, 30 families and among nine orders were recorded in the study area during from June 2016 to May 2017. Among the bird species recorded, six species were waterbirds and 42 species were terrestrials (Table 1). Regarding the study sites, 20 species were recorded birds at Site I. In Site II, 17 species of birds were found and 21 species were recorded from site III. The highest 29 species was found in Site IV (Figure 2,3). In recorded among nine orders, Passeriformes revealed the highest composition (62.50%) and followed by orders: Ciconiiformes (10.42%), Coraciiformes (8.34%), Cuculiformes (6.25%), Strigiformes (4.17%), Anseriformes (2.08%), Pelecaniformes (2.08%), Falconiformes (2.08%) and Psittaciformes (2.08%) (Figure 4).

4. Discussion

Most number of bird species was found in Site IV than other sites, due to the presence of suitable habitat for bird such as trees, shrubs and throns. According to the data, the maximum bird species was recorded in shrub, tree, cultivation, grass, second growth and plains. This indicated that these habitats are good shelter for most birds.

According to the Birdlife International [9], the Central Dry Zone of Myanmar comprises the Ayeyarwady Plains. In this study,*Halcyon smyrnensis*,*Turdoidesgularis*, *Athenebrama*, *Upupaepops*, *Pycnonotuscafer*, were found in four study sites during the study period. It could be considered that these birds are very common bird species in all study sites.

Concerning the composition of bird species in different orders, the largest number of species was recorded under order Passeriformes, the second largest number in Ciconiiformes, the third in Coraciiformes, the fourth in Cuculiformes, the fifth in Strigiformes and the lowest in Anseriformes, Pelecaniformes, Falconiformes and Psittaciformes.

Regarding with previous local workers, a total of 105 species of bird was recorded in Shwesettaw Wildlife Sanctuary, Magway Region by Thet ThetTun [14]. She recorded three endemic species, *Turdoidesgularis* (White-throated Babbler), *Miraframicroptera*(Burmese Bushlark) and *Crypsirinacucullata* (Hooded Treepie). However, in the present study only two endemic species of *Turdoidesgularis* (White-throated Babbler) and *Miraframicroptera* (Burmese Bushlark) were found.

Nu NuTun [15] reported that *Hirundosmithii* (Wire-tailed Swallow) was encountered throughout the year in her study area of Mandalay. However in the present study, this species was not recorded in rainy season. KhinHninThet[16], recorded *Ardea alba* (Great Egret) in Monywa environs throughout the year, in the present study, this species occurred only in cold season.

A total of 48 birds species were distributed in the study sites. In addition, Myanmar endemic bird species of White-throated Babbler, *Turdoidesgularis*, Jerdon's Minivet *Pericrocotusalbifrons*, Hooded Treepie*Crypsirinacucullata* and Burmese Bushlark*Miraframicroptera* were recorded in Bagan's environs. These data may be useful as baseline information to account the bird species for future research.

5. Conclusion

In conclude, composition of bird species depend on food availabilityand suitable habitats. However, habitat can change overtime due to people activity by traveling and of the natural resources by human being and seasonal changes in this study area. As the habitat changes along multifaceted biological and environmental gradients, a particular bird species can appear increase or decrease in number. In the present study, a total of 48 bird species was recorded. Of these, 6 water bird species and 42 terrestrial birds and 4 Myanmar endemic bird species were recorded. Therefore, there is need to observe avian diversity for future inthis study area.

6. Tables and finger

Table 1: List of bird species recorded in the study sites

No.	Order I	Family	Scientific name	Common name
1.	Anseriformes	Anatidae	*Tadornaferruginea*	Ruddy Shelduck
2.	Ciconiiformes	Ardeidae	*Nycticoraxnycticorax*	Black-crowned Night Heron
			Ardeacinerea	Grey Heron

			Egrettagarzetta	Little Egret
			Bubulcus ibis	Cattle Egret
		Ciconiidae	*Mycterialeucocephala*	Painted Stork
3.	Pelecaniformes	Phalacrocoracidae	*Phalacrocoraxcarbo*	Great Cormorant
4.	Falconiformes	Falconidae	*Falco jugger*	Laggar Falcon
5.	Psittaciformes	Psittacidae	*Psittaculaalexandri*	Red-breasted Parakeet
6.	Cuculiformes	Cuculidae	*Clamatorcoromandus*	Chestnut-winged Cuckoo
			Clamatorjacobinus	Pied Cuckoo
		Centropodidae	*Centropussinensis*	Greater Coucal
7.	Strigiformes	Strigidae	*Athenebrama*	Spotted Owlet
		Tytonidae	*Tyto alba*	Barn Owl
8.	Coraciiformes	Meropidae	*Meroporientalis*	Green Bee Eater
		Upupidae	*Upupaepops*	Common Hoopoe
		Alcedinidae	*Cerylerudis*	Pied Kingfisher
		Halcyonidae	*Halcyon smyrnensis*	White-throated Kingfisher
9.	Passeriformes	Pycnonotidae	*Phcnonotuscafer*	Red-vented Bulbul
			Pyconotusmelanicterus	Black-crested Bulbul
			Hypsipetesthompsoni	White-headed Bulbul
		Estrildinidae	*Amandavaamandava*	Red Avadavat
		Timallinidae	*Turdoidesgularis*	White-throated Babbler
			Chrysommasinense	Yellow-eyed Babbler
			Pellorneumruficeps	Puff-throated Babbler
		Dicrurinidae	*Dicrurushottentottus*	Hair-creasted Dragon
			Dicrurusparadiseus	Greater-racket-tailed Drongo
	Passeriformes	Corvinidae	*Dendrocittavagabunda*	RufousTreepie
			Crypsirinacucullata	Hooded Treepie
		Passeridae	*Motacilla alba*	White Wagtail
			Motacillacinerea	Grey Wagtail
			Anthusrufulus	Paddyfield Pipit
			Anthushodgsoni	Olive-backed Pipit
		Oriolinidae	*Oriolustraillii*	Maroon Oriole
			Oriolusxanthornus	Black-hooded Oriole
			Pericrocotusalbifrons	Jerdon'sMinivet
			Pericrocotusflammeus	Scarlet Minivet
		Saxicolinidae	*Saxicolacaprata*	Pied Bushchat
			Copsychussaularis	Oriental Magpie Robin
		Aludidae	*Miraframicroptera*	Burmese Bushlark
	Passeriformes	Hirundinidae	*Hirundorustica*	Barn Swallow
			Zosteropspalpebrosus	Oriental White Eye
		Laniidae	*Laniuscollurioides*	Burmese Shrike
		Rhipidurinidae	*Rhipiduraalbicollis*	White-throated Fantail
		Aegithinidae	*Aegithinatiphia*	Common Iora
		Sylviidae	*Orthotomussutorius*	Common Tailorbird
		Nectariniidae	*Nectariniaasiatica*	Purple Sunbird
		Estrildidae	*Lonchurapunctulata*	Scaly-breasted Munia

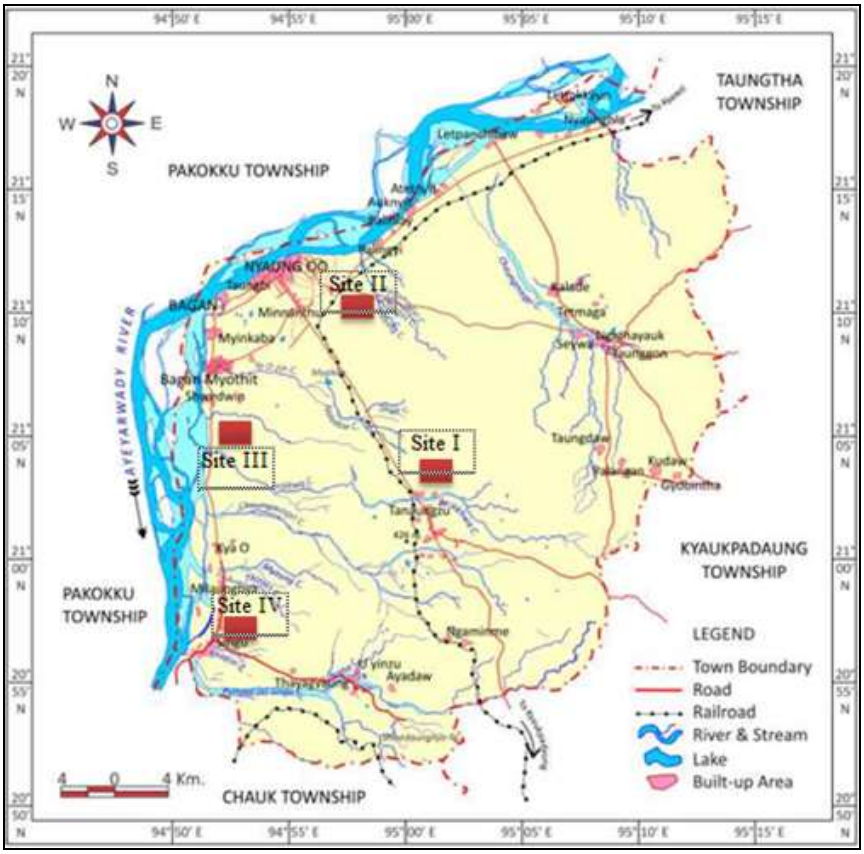

Fig 1: Location map of study area and study sites

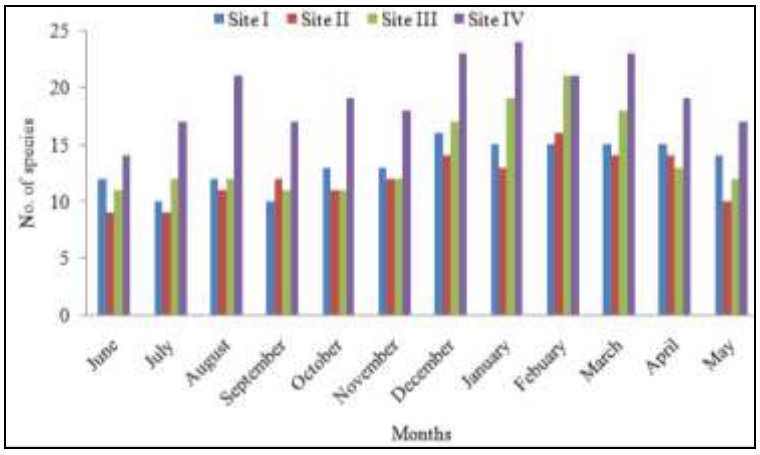

Fig 2: Relative monthly occurrence of bird species recorded at three study sites during June 2016 to May 2017

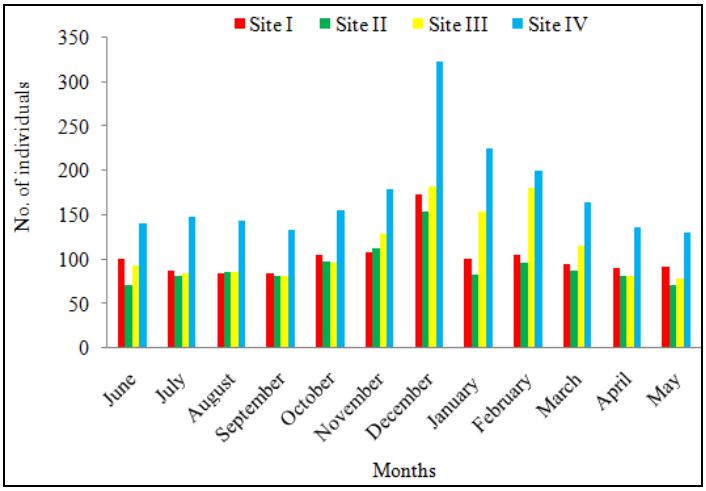

Fig 3: Relative monthly occurrence of bird individuals recorded at three study sites during June 2016 to May 2017

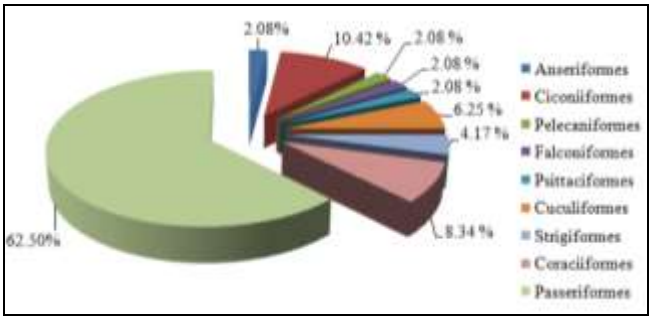

Fig 4: Percentage occurrence of bird species under respective orders

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8. References

1. Gill FG. *Ornithology* 2nd edition. W.H. Freeman and company. New York, 2001, 766.
2. Robson C. *Birds of South-east Asia*. New Holland. Publishers (UK) Ltd, 2005, 304.
3. Smythies BE. *The birds of Burma*. Second Edition. Oliver and Boyd, Ltd, Edinburgh, London, 1953, 525.
4. Hickmar CP, Roberts LS. *Biology of Animals*. Six Edition. W.M.C. Brown Communications Inc, 1994, 713-737.
5. Davison GWH, Fook. *A photographic Guide to Birds of Borneo*. New Holland Publishers (UK) Ltd, 1996, 144.
6. Wallace GJ, Mahan HD. *An introduction to Ornithology*.2nd edition.Macmillam.Publishing company.Inc. New York, 1963, 230.
7. Urfi AJ. *Breeding ecology of birds*. Department of Environmental Biology, 2003, 22-32.
8. Gill FG. *Ornithology* 1st edition. W.H. Freeman and Company, New York, 1990, 766.
9. Birdlife International. Avibase - Bird Checklists of the World, Myanmar, 2016. Available from: http://*www.ebird.org*/ (Accessed February, 2016).
10. Harisha M, Hosetti B. Diversity and distribution of avifauna of Lakkavalli Range Forest, Bhadra Wildlife Sanctuary, Western Ghat, India, Ecoprint: An International Journal of Ecology. 2009; 16:21-27.
11. Smythies BE. The Birds of Burma, Fourth Edition. Natural History Publications (Borneo) Sdn. Bhd, 2001, 606.
12. Kyaw Nyunt Lwin, Khin Ma Ma Thwin. Birds of Myanmar. Swiftwinds services Co. Ltd. MingalarTaungNyunt Township, Yangon, Myanmar, 2003.
13. Strange M. A Photographic Guide to the Birds of South-East Asia.Peripula Editions (HK) Ltd, Singapore, 2002, 348.
14. Thet Thet Htun. Species diversity of birds in Shwesettaw wildlife sanctuary, Magway Region.*PhD Dissertation*. Department of Zoology, University of Mandalay, 2010.
15. Nu NuTun. Distribution and seasonal occurrence of avifauna in Mandalay Environs.*PhD Dissertation*, Department of Zoology, University of Mandalay, 2011
16. Khin Hnin Thet. Ecological aspect of avian fauna around Monywa Environs, SagaingRegion.*PhD Dissertation*, Department of Zoology, University of Mandalay, 2013.