Observation on Habitat Utilization of Some Birids in Sagaing Environs

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Abstract

During the study period from July, 2015 to February, 2016, a total of 58 species, 17 species of water birds and 41 species of terrestrial birds were recorded in two study sites of Sagaing Environs. These birds were distinguished into 43 residents and 15 winter visitors. Eight types of microhabitats were categorized in the study area, the highest occurrence species of (37.7%) found in bushy area and (32.07%) found in cultivation area ,the lowest occurrence of (13.3%) found in human settled area and (18.86%) found in mushy area. *Starnus burmannicus, Acridotheres tristis, A.grandis, A.fuscus, Corvus macrorhynchos, Passer domesticus, P.montanus* were found in six microhabitat types as paddy field, human settled area, cultivation area, bushy area, woody tree and open ground, while *Grus grus* (Common Crane) inhabited in only one habitat. Myanmar endemic species of *Streptopelia decaocta, Turdoides gularis* and *Micrafra microptera* were observed during study period. Regarding to the status of the bird species according to IUCN, two near threatened species, *Anastomus oscitans* (Asian Openbill) and *Threskiornis melanocephalualus* (Black-headed ibis) were recorded in this study period.

Keywords: Birds, habitat utilization

Introduction

Birds occupy a very significant position in human society. They provide human with food, medicines, fertilizers, beautiful decorative parts, haunting songs and bring about pollination. In addition birds are important disperses of many plant seeds. Birds are good indicators of quality of our environment and also key species for environmental education for public awareness (Gill, 2001).

The current classification of living bird recorded 9648 species in the world, and 1251 species are known to occur in South East Asia (Robson, 2008).

Myanmar is one of the most diverse avian faunas per units area of country in the world. Myanmar is home to at least 1114 bird species after researchers identified 20 previously undocumented species during recent surveys reports (Aye Aye Win, 2015). Among them, 49 of 1114 species are globally threatened species.

Myanmar is on both Central and East Asian Flyways of the migratory birds. Many migratory birds winter in wet lands and on coastal area each year.

The total number of birds now on the Myanmar list is approximately 1240, of these some 200 are true migrants occurring only as winter visitors. The remainders are residents through many may be classed as local migrants (Kings and Dickinson, 1995).

Birds need habitat to survive. Exactly what type and how much depends on a species food preferences, foraging strategies, and nest site requirements.

In Myanmar, There are many diverse habitats for birds, such as forests, wetlands, ponds and shrub and urban areas (Zuo Wei and Mundkur, 2004). Many bird species require mix habitat types.

Habitat destruction vastly increases an area's vulnerability to natural disaster like flood and drought crop failure, spread of disease, and water contamination. Habitat destruction by human activity is mainly for the purpose of harvesting natural resources for industry production, urbanization and conversion of land to agriculture.

Habitat loss was the major cause of endangerment of the birds in the Asia region. Most critical and endangered bird species had restricted range and were specialized to a particular habitat type (Khin Gyee Maung, 2005).

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Although Saging is located in the central dry zone of Myanmar, the city has many habitat types for birds such as paddy fields, swamps, lake, garden, hill, bushes, and tall trees. So it is a preferable site for avian fauna, providing food, shelter and breeding site for resident as well as migrant birds. Furthermore, no other researcher has yet specifically studied about the habitat utilization of avian fauna in this area.

The present study was conducted with the following objective; to record and identify the bird species in Sagaing Environs, to determine the composition of bird species and to investigate the habitat types utilized by the bird species.

Materials and Methods

The study area was undertaken at Sagaing environs, Sagaing Region. It lies at 21° 54' 24.64" N and 95°56' 55.73"E (Fig.1).

Study Sites

Eight microsites were selected according to different microhabitats of study area.

Site I
(a) Woody tree
(b) Open ground
(c) Bushy area
(d) Human settled area

Site II
(a) Freshwater pond
(b) Paddy field
(c) Marshy area
(d) Cultivation area

Study period

The Study period lasted from July 2015 to February, 2016.

Bird watching and data collection

Bird were observed with the aid of binoculars and photographed by digital camera. Bird watching was undertaken four days per month during the period from 6:30 to 10:30 am. Data collection was made monthly during study period.

Point Count Method

The collection of data was made using point count method. Point count involved a standing in one spot and recording all birds seen or heard point count within 10 minutes. The minimum distances between point count was 200 m away. For each species, the number of individual were recorded separately.

Identification of Specimens

Species identification was made following King and Dickinson (1995), Smythies (2001) and Robson (2015).

Analysis of Data

The collected data was analyzed as following

$$\text{Relative abundance} = \frac{\text{No. of individuals of species}}{\text{total no. of individuals of all species}} \times 100$$

(Bisht *et. al.*, 2004)

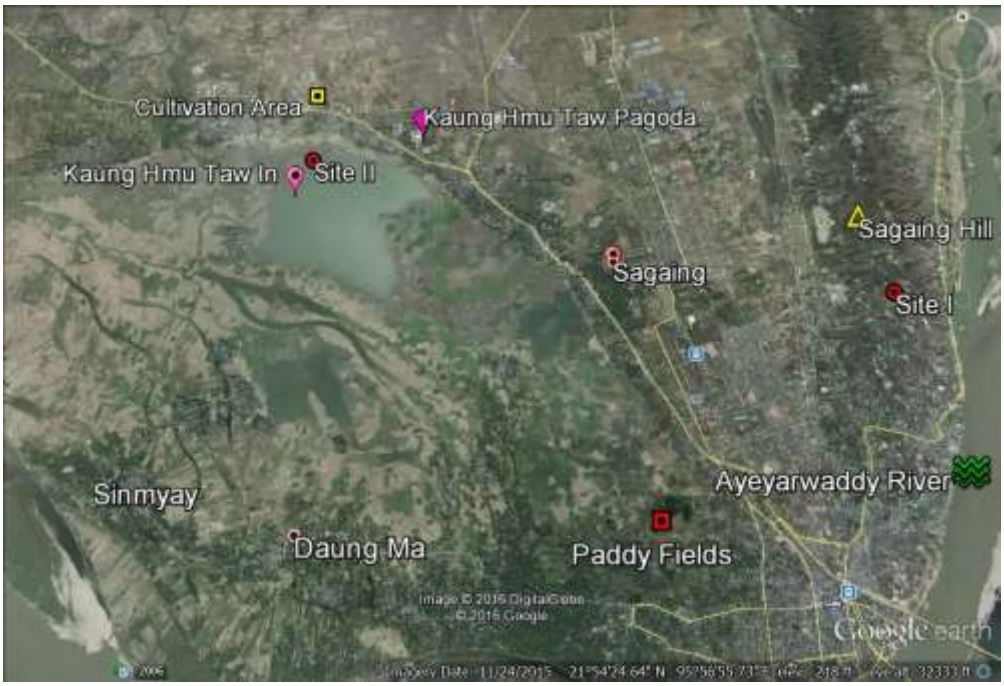

Fig.1 Location map of Sagaing Environs (Source: 2016 Google earth)

Results

A total of 58 species of birds confined to the 12 orders, and included among 32 families and 47 genera were identified during the study period (Table 1).

Table 1 **Occurrence of bird species at different microhabitat types of two study sites**

No	Scientific Name	Common Name	Type of microhabitats							
			Site I				Site II			
			Woody tree	Open ground	Bushy area	Human settled area	Freshwater pond	Paddy field	Marshy area	Cultivation area
1	*Tadorna ferruginea*	Ruddy shelduck	-	-	-	-	Â	-	Â	-
2	*Anas acuta*	Northern Pintail	-	-	-	-	Â	-	Â	-
3	*Megalaima haemacephala*	Coppersmith Barbet	Â	-	Â	-	-	-	-	-
4	*Upupa epops*	Common Hoopoe	Â	-	Â	-	-	-	-	-
5	*Coracias benghalensis*	Indian Roller	-	-	-	-	-	-	-	-
6	*Halcyon symrenensis*	White - throated Kingfisher	-	-	Â	-	Â	-	-	-
7	*Alcedo atthis*	Common kingfisher	-	-	-	-	Â	-	-	-
8	*Ceryle rudis*	Pied Kingfisher	-	Â	-	-	Â	Â	-	Â
9	*Merops orientalis*	Green Been - eater	Â	Â	Â	-	-	Â	-	Â
10	*Psittacula krameri*	Rose - ringed parakeet	Â	-	-	-	-	Â	-	Â
11	*Psittacula finshii*	Green - headed parakeet	-	-	Â	-	-	Â	-	Â
12	*Columba livia*	Rock pigeon	Â	Â	Â	Â	-	-	-	Â
13	*Streptopelia chinensis*	Spotted dove	Â	Â	Â	Â	-	-	-	Â
14	*Streptopelia decaocta*	Eurasian collared dove	Â	-	Â	-	-	-	-	-
15	*Grus grus*	Common crane	-	-	-	-	-	-	-	Â
16	*Tringa glareola*	Wood sandpiper	-	-	-	-	Â	-	Â	-
17	*Actitis hypoleucos*	Common sandpiper	-	-	-	-	Â	-	Â	-
18	*Himantopus himantopus*	Black - winged - stilt	-	-	-	-	Â	Â	Â	-
19	*Charadrius dubius*	Little ringed plover	-	-	-	-	Â	Â	Â	-
20	*Milvus migrans*	Black kite	Â	Â	-	-	-	-	-	-

Table 1 continued

	Type of microhabitats	
	Site I	Site II

No	Scientific Name	Common Name	Woody tree	Open ground	Bushy area	Human settled area	Freshwater pond	Paddy field	Marshy area	Cultivation area
21	*Tachybaptus ruficollis*	Little grebe	-	-	-	-	Â	Â	Â	-
22	*Phalacrocorax niger*	Little cormorant	-	-	-	-	Â	Â	Â	-
23	*Egretta garzetta*	Little Egret	-	-	-	-	Â	Â	Â	-
24	*Mesophyox intermedia*	Intermediate Egret	-	-	-	-	Â	Â	Â	-
25	*Ardea alba*	Great Egret	-	-	-	-	Â	Â	Â	-
26	*Bubulcus ibis*	Cattle Egret	-	-	-	-	Â	Â	Â	-
27	*Ardeola grayii*	Indian Pond Heron	-	-	-	-	Â	Â	Â	-
28	*Ardea cinera*	Grey heron	-	-	-	-	Â	Â	Â	-
29	*Plegadis facinellus*	Glossy ibis	-	-	-	-	Â	Â	Â	-
30	*Threskiornis melanocephalus*	Black - headed ibis	-	-	-	-	Â	Â	Â	-
31	*Anostomus oscitons*	Asion openbill	-	-	-	-	Â	Â	Â	-
32	*Lanius schach*	Long - Tailed shrike	Â	-	Â	-	-	-	-	Â
33	*Lanius cristatus*	Brown shrike	-	-	Â	-	-	-	-	Â
34	*Lanius collurioides*	Burmese shrike	Â	Â	Â	-	-	-	-	Â
35	*Corvus macrorhynchos*	Lorged - billed. crow	Â	Â	Â	Â	-	Â	-	Â
36	*Dicrurus macrocercus*	Black Drongo	-	Â	Â	-	-	Â	-	Â
37	*Aegithina tiphia*	Common Iora	Â	Â	Â	-	-	-	-	Â
38	*Copsychus saularis*	Oriental Magpie Robin	Â	Â	Â	-	-	-	-	Â
39	*Saxicola caprata*	Pied bushchat	Â	Â	Â	-	-	-	-	Â
40	*Saxicola maurus*	Eastern stomechat	-	-	Â	-	-	-	-	Â

Table 1 continued

	Type of microhabitats	
	Site I	Site II

No	Scientific Name	Common Name	Woody tree	Open ground	Bushy area	Human settled area	Freshwater pond	Paddy field	Marshy area	Cultivation area
41	*Sturnus burmannicus*	Venous breasted starling	Â	Â	Â	Â	-	Â	-	Â
42	*Acridotheres tristis*	Common Myna	Â	Â	Â	Â	-	Â	-	Â
43	*Acridotheres fuscus*	Jungle Myna	Â	Â	Â	Â	-	Â	-	Â
44	*Acridotheres grandis*	White - Vented Myna	Â	Â	Â	Â	-	Â	-	Â
45	*Hirundo rustica*	Burn swallow	-	-	Â	-	Â	Â	Â	Â
46	*Pycnonotus cafer*	Red - vunted bulbul	Â	Â	Â	Â	-	-	-	Â
47	*Pycnonotus blanfordi*	Streak - eared bulbule	Â	Â	Â	Â	-	-	-	Â
48	*Orthotomu sutorius*	Common Tailorbird	Â	-	Â	Â	-	-	-	Â
49	*Turdoides gularis*	White throated babbler	-	-	Â	-	-	Â	-	Â
50	*Mirafra microptera*	Burmese Bushlark	Â	-	Â	-	-	-	-	Â
51	*Cinnyris asiatica*	Purple sunbird	-	-	Â	-	-	-	-	Â
52	*Passer domesticus*	House sparrow	Â	Â	Â	Â	-	Â	-	Â
53	*Passer montanus*	Eurasian Tree sparrow	Â	Â	Â	Â	-	Â	-	Â
54	*Ploceus phillippinus*	Baya weaver	-	-	Â	-	-	Â	-	Â
55	*Lonchura punctulata*	Scaly breased Munia	-	-	Â	-	-	Â	-	Â
56	*Motacilla alba*	White wagtail	-	-	Â	-	-	Â	-	Â
57	*Motacilla cinera*	Grey wagtail	-	-	-	-	-	Â	-	Â
58	*Motacilla citreola*	Citrine Wagtail	-	-	-	-	-	Â	-	Â
	Total		25	19	34	12	21	31	20	34
	Total		27.7%	21.1%	37.7 %	13.33%	19.81%	29.24%	18.86%	32.07%

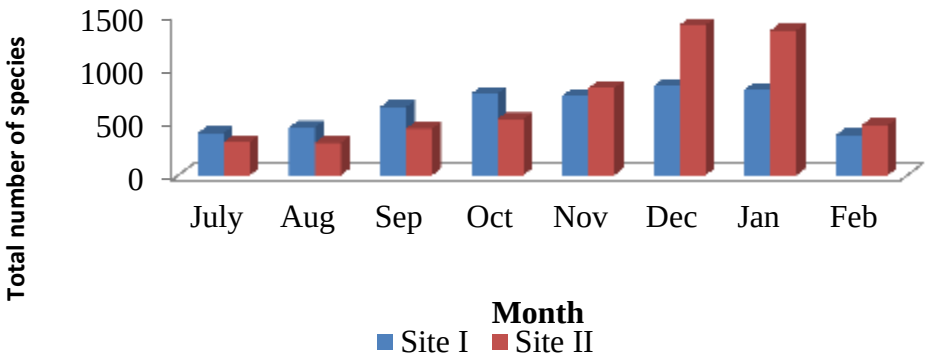

Fig. 2 Monthly comparison of total number species during monthly

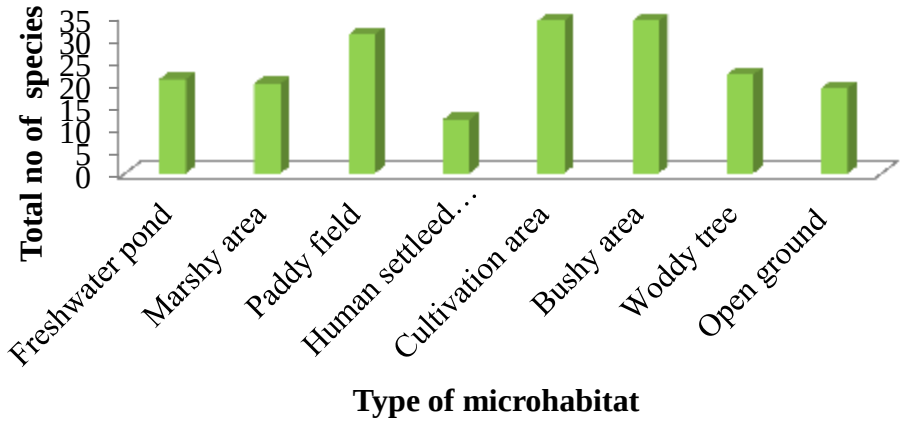

Fig. 3 Occurrence of bird species at different microhabitat types of two study sites

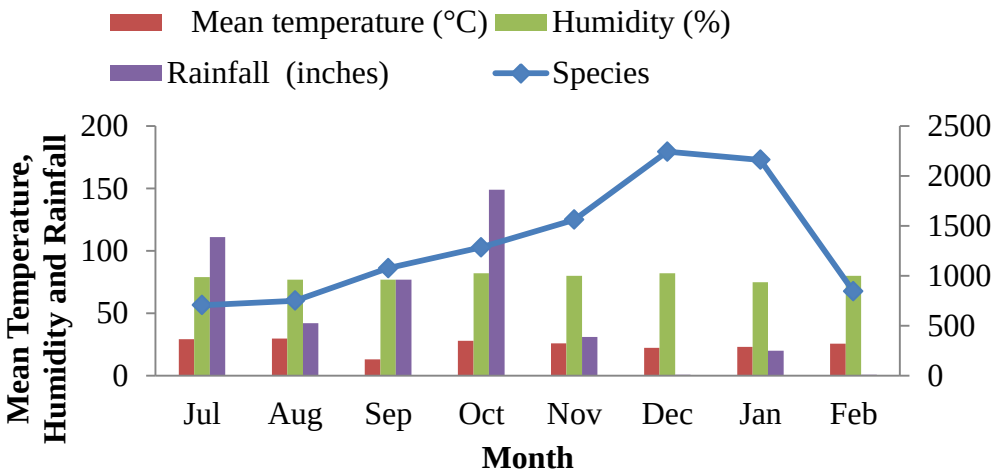

Fig. 4 Relation between species and weather conditions of temperature, rainfall and humidity of the study area (June 2015

A. *Acridotheres fuscus* (Woody tree)

B. *Merops orientalis* (Open ground area)

C. *Turdoides gularis* (Bushy area)

D. *Passer domesticus* (Human settle area)

E. *Tadorna ferruginea* (Freshwater pond)

F. *Motacilla cinera* (Paddy field)

G. *Egretta garzetta* (Marshy area)

H. *Lanius cristatus* (Cultivation area)

Plate 1 Some birds of different microhabitat

Discussion

A total of 10630 individual and 58 species (17 species of water birds and 41 species of terrestrial birds) were recorded from the two study sites during July, 2015 to February, 2016.

In this study, 5005 individual confined to 35 species at site I and 5625 individual confined to 57 species of birds at site II. The different numbers of species and individual between site I and site II may be due to the different habitats source of food availability and the present of disturbance and different topography.

Among 12 orders, the highest species number (27) and highest species composition (46.5%) was recorded in order Passeriformes and followed by order Ciconiformes with eight species and species composition was (15.5%). The lowest number of species (only one) species and species composition (1.72%) were rerorded in order Piciformes, Falconiformes, Pelicaniformes,Gruiformes and Podicipediformes.

Among 58 species, 41 species found to be resident and 15 species were winter visitor birds. The winter visitor are *Tadorna ferruginea, Anas acuta, Grus grus, Tringa glareola, Actitis hypoleucos, Himanhopus himantopus, Charadius dubuis, Ardea cinera, Threskiornis melanocephalus, Anastornus oscitans, Lanius cristatus, Hirundo rustica, Motacilla alba, M. cinera* and *M. citerola.*

Myanmar endemic bird species, *Streptopelia decaota, Turdoides gularis* and *Mirafra microptera* were recorded during the study period. This study indicated that a Sagaing environs is highly rich in bird species and population due to the availability of suitable habitats and foods.

In the present study, the number of bird species was recorded as highest in cold season due to the present of winter visitors. The highest number of bird individuals (21.09%) were recorded in December and followed by January (20.31%) and November (14.69%). It may be assumed that winter birds migrate to this study area. The lowest number of bird individual (6.64%) were observed in July and August (7.07%) respectively.

In the present study, *Columba livia* showed the highest individual number (1121) and (10.54%) and followed by *Hirundo rustica* (1077) individuals and (10.13%). *H. rustica* was winter visitor, large flocks roast on bare sand-banks of larger rivers where they may be seen at dawn and dusk. Since adult arrive in July and Juveniles leaves in June. They are seen in every month of the year.

The lowest number of individual (8) and (0.07%) *Ceryle rudis* was observed in and followed by *Megalaima haemacephala* (9) individual number and (0.08%) respectively. *C. rudis* was found in only study site II.

When comparison was made with previous local works, Aye Aye Khaing (1998) recorded 58 species of birds (11 species of waterbirds and 47 species of terrestrial birds) in Sagaing environs. She recorded families Strigidae and Glareolidae which are not included in this area. However 5 species of winter birds two endemic species reported in her study, but 16 species of winter birds and three endemic species were found in this work.

Nu Nu Tun (2011) recorded 2557 individuals confined to 98 species in Mandalay environs, 77 terrestrial and 21 aquatic birds including 18 winter birds, two endemic species were recorded. In the present study, 42 species were terrestrial and 16 species were waterbirds, In the previous study of Nu Nu Tun (2011) were found to be more than present study. However, the occurrence of three endemic species was more abundant in this study. The disparity in the result between these two research works might be due to the different location and habitat and duration of study periods.

Single species of bird cannot be found everywhere in Myanmar. Many species of birds use different habitat at different time of the year. Migratory species, especially may be forced to use different habitats in different region simply because limited chaices are available. (Davies, 2004)

A total of eight habitat types were observed in the study area. Single species of bird cannot be found in each habitat type during the study period. The highest number of bird species was found in bushy area and cultivation area (34) species followed by paddy field (31) species and woody tree (25) species, followed by(21) species fresh water pond and (20) species marshy area. The lowest number of bird species were found in ground open (19) species and human settled area (12) species (Plate 1).

Sturrnus buramannicus, Acridotheres tristis, A. fuscus A. grandis, Corvus macrorhynchos, Passer domesticus and *Ploceus montanus* were found in six microhabitats types (Paddy field, human settled area, cultivation area, bushy area, woody tree and ground open), *Grus grus* was found in only one habitat cultivation area. It is clearly indicated that the bird species utilized mix habitats, except (Common Crane) and highest species and individual number of birds was found in many habitat types.

Nowaday, the activity of people such as urbanization, deforestation, human made pollution and over fishing have resulted in loss of habitats for bird. Habitat loss was the major cause of endangerment of the birds in Asian region. Most critical and endangered bird species had restarted range and were specialized to particular habitat type. (IBA, 2008).

Birds life international disclosed that in the last assessment 2015, a total of 1313 species were considered threatened to extinction. An additional 880 species are considered near threatened and four are extinct in the wild, giving a total of 2193 species that are urgent priorities for conservation action.

According to IUCN red list (2015), 45 species of birds are globally threatened, six species of birds are critical endangered and 70 species of birds were near-threatened. In the present study, *Threskiarns melanocephalaus* (Black-headed ibis) and *Anostomus oscitons* were recorded near threatened species.

It is concluded, this area is very important for bird conservation due to a great number of bird species individuals and abundance of endemic bird species still exist in the region. It is also highly endowed with diversed bird species because the presence of different microhabitats and food resources. The majoring of study found a positive correlation between habitat diversity and bird species diversity. Therefore Sagaing environs need ecological surveys of the avian fauna to generate essential data for conservation of the fauna and habitats in the area.

Conclusion

It was thus concluded that the structure of mouth, teeth, gill rakers, oesophagus, stomach and intestine were useful in estimating the feeding habits of fish. The smallest ratio of standard length and intestinal length (<1.4) was observed in studied carnivores (*C. punctatus* and *G. giuris*) while largest ratio (> 7.0) was observed in herbivores (*L. calbasu* and *C. catla*). It could be assumed that longer intestine are herbivores, shorter one are carnivores and intermediate are omnivores (*M. cavasius* and *O. bimaculatus*). Intestinal length and standard length ratio can be used to assess feeding habit of fish.

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References

Aye Aye Chaing, 1998. A taxonomic stydy of birds of Sagaing environs. *MSc Thesis*, Department of Zoology, Mandalay University.

Aye Aye Win,2015. Myanmar's bird species count jumps to 114. Available from *http:/ new. Mongabay. Com/2015/27* (Accessed Myanmar Time**,** 10, January, 2015).

Birdlife international, 2015.Bird on the IUCN Red List. Available from http: // www. birdlife. org / action / science / species / global.-species- programe / redlist htm(Accessed 25 February 2016)

Davies J. Sebastion. A.C-chan. S.. 2004. A Weltland Inventory for Myanmar Ministry of Environment Japan, Tokyo 100-8975, Japan.

Gill, F.B., 2001. *Ornithology*. Second edition. W. H. Freeman and Company. NewYork. 766 pp.

IBA, 2008, Forewords. Important Birds areas in Asia. Aviailable From WWW. iba.com (Accessed 5 May. 2011)

Khin Gyee Maung, 2005. Community structure of Wethigan Wildlife Sonctuary in Muanmar with special emphasis on avian fauna. *PhD Thesis*, University of Mandalay.

King and Dickinson E.C, 1995. Collins Field Guides: Birds of South East Asia. Harper Collins Publishers. London. PP.

Nu Nu Tun, 2011.Distribution and seasonal occurrence of avifauna in Mandalay environs. *PhD Thesis*, Univcrsity of Mandalay.

Robson, C, 2015. Birds of South East Asia, Thiland, Peninsular Malaysia Smgapore, Vietman, Cambodia, Laos and Myanmar. New Holland publishers (UK) Ltd. London Bhushan, B, Graham.F, Akria, H, Taei, M, Dewi, M.P, Koichiro, S, and Shungi, U, 1993. A Field Guide to the Waterbirds of Asia. Wild Bird Socrety of Japan. Pp-216-218

Symthesis, BE. 1953 and 2001. The birds of Burma. Oliver and Boyd Ltd. Edinburgh, london.

Zuo Wei, D.L., and Mundkur, T., 2004. Number and distribution of waterbirds and wetlands in the Asia- Pacific Region. Wetlands International Malaysia.