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## **Avian and Floristic Composition Around Kandawgyi In (Lake), Mandalay**

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### **Abstract**

Bird species around Kandawgyi In (Lake), Mandalay was investigated during November 2008 to October 2009. A total of fifty three species of birds distributed under twenty seven families and twelve orders were documented. Among them, forty species were terrestrial birds and thirteen species were aquatic birds. Fourteen species of birds occurred every month of study period. Vegetative analysis conducted around study area showed thirteen species of tree plant and nineteen species of aquatic plants.

Key words: Composition, birds, flora, Kandawgyi In (Lake), Mandalay

### **Introduction**

The avifauna of Myanmar includes a total of 1062 species, of which 6 are endemic, 2 have been introduced by humans, and 10 are accidental. One species listed is extirpated in Myanmar and is not included in the species count. 51 species are globally threatened (Wikipedia, 2011).

Myanmar is a country full of interest. 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 (King 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. Some birds can live in suburban and even urban environments. Species whose habitat requirements are specific, especially area-sensitive birds requiring large tracts of woodland or grassland, have more difficulty finding suitable amidst our ever-developing human landscape. Successful habitat maintenance follows several guiding principles. These can be used by anyone, on both public and private land, to

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conserve breeding habitat, wintering habitat, and migratory corridors of all sizes (Bird Habitat, 2008).

This paper documents the bird species and their habitat structure in Kandawgyi In (Lake), Mandalay.

### **Materials and Methods**

Data collection was made at Mandalay Kandawgyi In (Lake) situated at western part of Mandalay and lie at 21° 63' 33.49" N and 96° 03' 39.23" E from November 2008 to October 2009. This area is about 12.76 km<sup>2</sup>. Swamp, marshy edge with hyacinth, separated ponds, garden and park and sparsely inhabited medium and tall woody trees were common.

The area was visited twice a month. All counts were conducted during the first 3 hours after sunrise. PCQ (Point Centered Quarter) method was used for determination on composition of plants.

### **Identification and classification of species**

Species identification and classification were made according to Smythies (1953), King and Dickinson (1995) Robson (2007).

Plants were identified according to Kress *et al.* (2003).

### **Results**

Fifty three species of bird belonging to 39 genera, 27 families of 12 orders were recorded including 40 terrestrial bird species and 13 water bird species.

Order Passeriformes contained highest number of species accounted for (52.92%), followed by Ciconiiformes (15.12%), Coraciiformes (5.67%) and Columbiformes (5.67%). Family Ardeidae (11.34%) showed the highest species composition, followed by Corvidae (9.45%), Passeridae (7.56%) (Table 1).

Occurrence of bird species was highest in March (33 species) and April (34 species) and lowest in November (16 species). Among the recorded species. *Halcyon smyenensis*, *Columba livia*, *Streptopelia chinensis*, *Phalacrocorax niger*, *Egretta garzetta*, *Casmerodius albus*, *Bubulcus ibis*, *Corvus splendens*, *C. macrohynchos*, *Dicrurus macrocercus*,

*Sturnus burmannicus*, *Acridothera tristis*, *Pycnonotus cafer*, *P. blanfordi*, *Passer domesticus* and *P. monatanus* were found every month of studied period. Nine species of *Alcedo atthis*, *Eudynamys scolopacea*, *Centropus sinensis*, *Apus affinis*, *Athene brama*, *Falco naumanii*, *Saxicola torquata* and *Motacilla alba* were observed only one month (Table 2) (Fig. 1).

Vegetative analysis showed the occurrence of thirteen tree plant species and nineteen aquatic plant species (Table 3 and 4).

Regarding occurrence in different vertical layers of plant the highest composition was found in *Delonix regia* (Sein-pan-gyi) and *Bombox ceiba* (Let-pan) (27.93% each) whereas the lowest in *Terminalia catappa* (Banda) (19.11%) in the category of  $0 > - \leq 3$ m. In the category of  $3 > - \leq 9$  m, the highest composition was observed in *Acacia nilotica* (Su-phyu) (19.8%), while the lowest in *Acacia leucophloea* (Hta-naung) (1.1%). The highest composition was recorded in *Bombox ceiba* (Let-pan) (25.2%) whereas the lowest in *Cassia fistula* (Ngu) (3.6%) for the category of  $9 > - \leq 12$  m. The highest composition was noted in *Bombox ceiba* (Let-pan) (57.12%) while the lowest in *Albizzia lebbek* Benth (Myanmar kokko) (42.84%) for the category of above 12 m (Table 3).

The highest occurrence of nine plant species occupied in the layer of  $3 > - \leq 9$ m height and the lowest two species in above 12 m height (Table 3).

Table 1. Composition of bird species in different orders and families

Sr No.	Order	Composition (%)	Sr No.	Family	Composition (%)
1.	Piciformes	1.89	1.	Megalaimidae	1.89
2.	Coraciiformes	5.67	2.	Upupidae	1.89
	/		3.	Coraciidae	1.89
	/		4.	Alcedinidae	1.89
	/		5.	Halcyonidae	1.89
	/		6.	Meropidae	5.66
3.	Cuculiformes	3.78	7.	Cuculidae	1.89
	/		8.	Centropodidae	1.89
4.	Psittaciformes	1.89	9.	Psittacidae	1.89
5.	Apodiformes	1.89	10.	Apodidae	1.89

Sr No.	Order	Composition (%)	Sr No.	Family	Composition (%)
6.	Strigiformes	1.89	11.	Strigidae	1.89
7.	Columbbiformes	5.67	12.	Columbidae	3.78
8.	Gruiformes	3.78	13.	Rallidae	3.78
9.	Falconiformes	1.89	14.	Falconidae	1.89
10.	Pelicaniformes	3.78	15.	Phalacrocoracidae	3.78
11.	Ciconiiformes	15.12	16.	Ardeidae	11.34
.	/		17.	Threskionithidae	3.78
12.	Passeriformes	52.92	18.	Laniidae	5.66
	/		19.	Corvidae	9.45
	/		20.	Muscicapidae	5.66
	/		21.	Sturnidae	7.56
	/		22.	Hiruninidae	1.89
	/		23.	Pycnonotidae	3.78
	/		24.	Cisticodae	1.89
	/		25.	Sylviidae	1.89
	/		26.	Nectariniidae	1.89
	/		27.	Passeridae	7.56

Table 2. Monthly occurrence of birds in Kandawgyi In (Lake) of Mandalay during November 2008 to October 2009.

Sr. No	Scientific Name	Nov 08	Dec 08	Jan 09	Feb 09	Mar 09	Apr 09	May 09	June 09	July 09	Aug 09	Sep 09	Oct 09	Total
1	<i>Megalaima haemacephala</i>				✓									1
2	<i>Upupa epops</i>		✓						✓		✓		✓	4
3	<i>Coracias benghalensis</i>											✓	✓	2
4	<i>Alcedo atthis</i>											✓		1
5	<i>Halcyon smyenensis</i>	✓	✓	✓	✓	✓	✓			✓	✓		✓	9





Table 3. Composition of tree plant species in Kandawgyi In (Lake) of Mandalay.

Sr. No.	Scientific Name	Local Name	Composition (%)			
			0 > - ≤ 3 m	3 > - ≤ 9 m	9 > - ≤ 12 m	above 12 m
1.	<i>Delonix regia</i>	Sein-pan-gyi	27.93	14.3	8.4	-
2.	<i>Cassia fistula</i>	Ngu	-	12.1	3.6	-
3.	<i>Terminalia catappa</i>	Banda	19.11	11	-	-
4.	<i>Acacia nilotica</i>	Su-phyu	-	19.8	-	-
5.	<i>Caesalpina pulcherima</i>	Sein-pan-galay	-	9.9	-	-
6.	<i>Millingtonia hortensis</i>	E-ka-yit	-	3.3	-	-
7.	<i>Madhuca longifolia</i>	Meze	-	17.6	21.6	-
8.	<i>Senna siamea</i>	Mezali	-	7.7	14.4	-
9.	<i>Calophyllum inophyllum</i>	Pon-nyet	24.79	-	-	-
10.	<i>Acacia leucophloea</i>	Hta-naung	-	1.1	-	-
11.	<i>Albizia lebbek</i> Benth	Myanmar-kokko	-	-	16.8	42.84
12.	<i>Bombox ceiba</i>	Let-pan	-	-	25.2	57.12
13.	<i>Pletopherum pterocarpum</i>	English-Mezale	27.93	3.3	9.6	-
Total number of tree plant species			4	10	7	2



Table 4. List of aquatic plants recorded in Kandawgyi In (Lake)

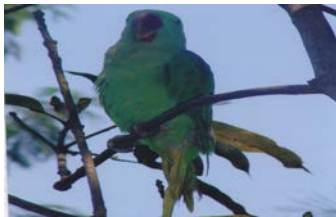
Sr. No.	Scientific Name	Myanmar name
1.	<i>Alternanthera Philoxeroides</i> Griset	Ka-na-phaw
2.	<i>Nelumbium speciosum</i>	Ba-don-ma-kyu
3.	<i>Colocasia andiquorum</i> Schott	Pein
4.	<i>Eichhornia Crassipes</i> Solms	be-da
5.	<i>Lemna minor</i>	be-sa
6.	<i>Jussiaea repens</i>	ye-ka-nyut
7.	<i>Ipomea aquatica</i>	–
8.	<i>Nelumbo nucifera</i> G.Lawson	Kya-bya
9.	<i>Nymphaea stellata</i> Willd	Kya-bya
10.	<i>Polygonum orientale</i>	Wet-Kyein
11.	<i>Hydrilla verticillata</i>	Ye-hmaw
12.	<i>Vallisneria spiralis</i>	Nga-shint-myet
13.	<i>Lemna minar</i>	Bae-sa-lay
14.	<i>Commelina nudiflora</i>	Myet-cho
15.	<i>Alocasia cucullata</i>	Pain
16.	<i>Canna glauca</i> Linn.	Buddha-tha-ra-na-a-wa
17.	<i>Hydrolea zeylonica</i>	Ye-hpot
18.	<i>Clitricularia aurea</i>	Bu-baung-pin
19.	<i>Nymphaea nouchali</i>	Kya-ni / Kya-phyu



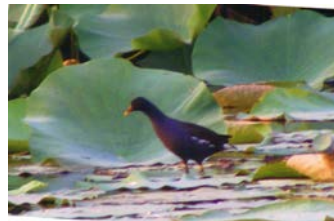
*Halcyon smyrnensis*



*Merops orientalis*



*Psittacula eupatria*



*Gallinula chloropus*



*Falco naumanii*



*Ardeola grayii*



*Ardea cinerea*



*Hirundo rustica*

Figure.1 Some bird species recorded in Kandawgyi In (Lake)

## Discussion

During the study period from November 2008 to October 2009, a total of 53 bird species were recorded in Kandawgyi In (Lake), Mandalay. Among them 40 species are terrestrial birds and 13 species aquatic birds. The highest species composition was found under order Passeriformes.

Fourteen species of birds were encountered throughout the study period. Therefore, these species are considered very common in Kandawgyi In (Lake).

A bird's habitat is the specific environment or ecological conditions in which species lives. Most habitat descriptions are based on vegetation, which reflects the climate, soil type, and which supports the animal life in a given location. Efforts to measure habitat variables often focus on vegetation structure and attempt to quantify the presence and abundance of different plant species in the habitat (Sibley, 2001; cited by Thet Thet Htun, 2010).

In the study area, 13 plant species of trees and 19 aquatic plant species are inhabited. Around the Kandawgyi In (Lake) is well suited with a variety of plants which are used for sheltering, roosting, feeding and breeding by aquatic as well as terrestrial bird.

Nowadays, the activities of people such as urbanization, deforestation, man made pollution have resulted in loss of habitats for bird. Moreover, over fishing is one important factor in loss of habitats for water birds. Habitat loss was the major cause of endangerment of the birds in the Asian region. Most critical and endangered bird species had restarted range and were specialized to a particular habitat type (IBA, 2008).

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## References

- Bird Habitat, 2008. All about birds: Habitat management. Available from [www.birdhabitat.com](http://www.birdhabitat.com). (Accessed 5 May 2011).
- IBA, 2008., Forewords. Important Birds areas in Asia (Available at [www.iba.com](http://www.iba.com). accessed by 5 May 2011).
- King, B.E. and Dickinson, D.E.C., 1995. *A field guide to the birds of South East Asia*. Japan, Collin, London.
- Kress, W.H., De Filippis, R.A., Farr, E. and Yin Yin Kyi, 2003. *A checklist of the trees, shrubs, herbs and climbers of Myanmar*. Department of Systematic Biology. Botany. National Museum of Natural History. Washington, D.C.
- Robson, 2007. *New Holland field guide to the birds of Southeast Asia*. New Holland Publishers (UK) Ltd. London.
- Smythies, B.E., 1953. *The birds of Burma*. Oliver and Boyd Ltd. Edinburgh, London.
- Thet Thet Tun, 2010. Species diversity of birds in Shwesettaw Wildlife Sanctuary, Magway Division. *Ph.D Thesis*. Zoological Department, University of Mandalay.
- Wikipedia, 2010. Bird's of Burma. Available from [www.wikipedia.com](http://www.wikipedia.com) (Accessed 5 May 2011).