

Avian Diversity and Conservation Status of Ambazari Lake and Forest area, Nagpur (M.S), India

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Abstract

Ambazari Lake is a major freshwater wetland in Nagpur city. This lake has high avifauna diversity which includes Aquatic (26.70%), Waders (8.7%) and Terrestrial species (64.6%). Area consists of 161 species of birds belonging to 16 Orders, 51 Families. Out of 161 species, 105 species were Resident, 40 species were Resident Migrant and 16 Migrant. Passeriformes is the dominant order which consist of 69 species, followed by Ciconiiformes, Charaniiformes, Anseriformes. Conservation of Wetland by converting it into a Biodiversity Park has been undertaken by State Government of Maharashtra, India.

Keywords: Avifauna; Migrant; Resident; Resident Migrant; Conservation; Ambazari Lake.

Introduction

Biodiversity at present is better understood for birds in many respects than any other major group of organisms because they probably inspire more extreme interest in humans, are often spectacular, relatively easily observed and not too cryptic to identify. Avifauna is one of the most important ecological indicators to evaluate the quality of habitats. Most of the birds are useful to mankind. Birds play a useful role in the control of insect pests of agricultural crops, as predators of rodents, as scavengers, as seed dispensers and as pollinating agents. Therefore birds are reared not only for preserving ecological balance but also for products of economic importance such as down feathers [7].

Nagpur is a major city in Central India of Maharashtra state. It lies on Deccan Plateau and has an altitude of 310.5 meters above the sea level. Ambazari Lake is one of the major freshwater wetland and largest lake in Nagpur city. From geographic point of view, Ambazari lake is situated between 21°12' N' and 79° 04' E'. It has a subtropical monsoon climate condition with temperature range 06°C-47°C and receives an annual rainfall of 1205 mm. It is spread over an area of 15.5 km² and has dry deciduous vegetation [6].

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Ambazari Lake has a diversity rich ecosystem and harbors a variety of local as well as migratory birds due to abundant food available throughout the year in the form of crustacean, insects, worms, molluscan, fishes as well as aquatic weeds [9].

The earlier studies on birds in Nagpur city and around Nagpur district were undertaken by investigators like Kedar (2012) who studied winter birds from Ambazari lake, Nagpur, Wanjari (2012) studied birds of Nagpur city, Chilke (2012), listed birds from Bamanwada lake of Chandrapur district, Harvey (2014) who listed of Dudhala lake and Ghotnimbala lake of Bhadrawati city of Chandrapur district, Wadatkar (2001) studied birds from Amravati University campus. This work was undertaken for the documentation of avifaunal diversity and steps for conservation of Ambazari Lake.

Methods and Materials

The study was conducted from September 2015 to June 2016. The observation was carried out by using a binocular (Olympus 8 x 40) during morning 6 to 10 AM. For making the list of the birds, photographs were taken by Canon 1200D (55mm-250mm lens) which was important to identify birds accurately to the generic and species level [1,3].

Results and Discussion

During the present investigation, a total of 161 birds' species belonging to 16 orders and 54 families were recorded from the Ambazari Lake. The number of recorded different species of birds belong to different orders which are as follows, 69 species belong to Passeriforms, 14 species belong to Ciconiiforms, 13 species belong to Charaniiforms, 11 species from Anseriforms, 10 species belong to

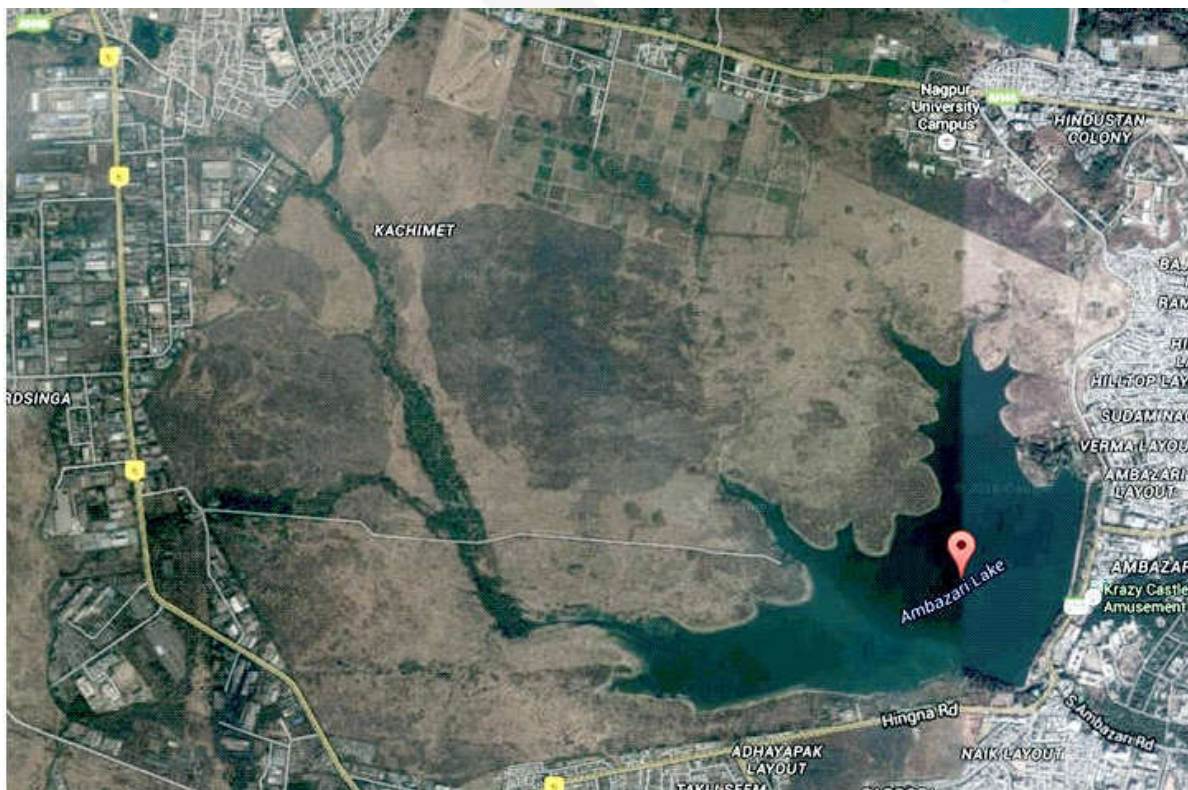
Coraciiforms, 8 species from Falconiforms, 7 species belong to Columbiforms, 5 species from Piciforms and Gruiforms each, 4 species belong to Cuculiforms and Galliforms, 3 species belong to Pelecaniforms, Psittaciforms, Strigiiforms each and 1 species belong to Podicipediforms and Apodiforms each (Table 3). Out of 161 birds, 105 were Resident, 40 were Resident Migrant, and 16 were Migrant (Table 1). The resident birds were observed in most of the months of the investigation period (Nov. to Jan.) but the migratory birds were observed mostly in winter's seasons. The occurrence of migratory birds in the area indicates that the critical habitat is important for the organism (Figure 1).

All the species of birds have different habitat as they may be Aquatic, Waders or Terrestrial. Around 43 species of birds are Aquatic which contribute about 26.7% of total birds, 14 species are Waders which contribute about 8.7% of total birds at Ambazari lake and the remaining 104 species of birds are Terrestrial which contribute largest percentage of birds at Ambazari is of 64.6% (Table 2).

Table 1: Abundance of Birds in Lake

| HABIT | Resident | Resident Migrant | Migrant |
|----------------|----------|------------------|---------|
| No. of Species | 105 | 40 | 16 |

Map of Study Area



(Source: Google Map)

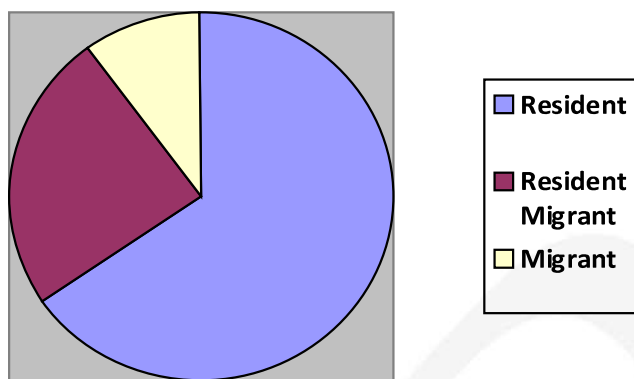


Fig. 1: Comparison of relative abundance of bird species along the study area (with reference to Table 1).

Table 2: Birds of Ambazari Lake according to Habitat

| S. No. | Habitat | No. of Species | % of composition |
|--------|-------------|----------------|------------------|
| 1. | Aquatic | 43 | 26.7% |
| 2. | Waders | 14 | 8.7% |
| 3. | Terrestrial | 104 | 64.6% |

Table 3: Avifaunal Diversity of Ambazari Lake

| Orders | Family | Common Name | Scientific Name | Habit |
|------------------|-------------------|---------------------------|-----------------------------------|-------|
| Podicipediformes | Podicipitidae | Little Grebe | <i>Tachybaptus ruficollis</i> | R |
| Pelecaniformes | Phalacrocoracidae | Great Cormorant | <i>Phalacrocorax carbo</i> | RM |
| Pelecaniformes | Phalacrocoracidae | Indian Shag | <i>Phalacrocorax fuscicollis</i> | RM |
| Pelecaniformes | Phalacrocoracidae | Little Cormorant | <i>Phalacrocorax niger</i> | RM |
| Ciconiiformes | Aedeidae | Large Egret | <i>Casmerodius albus</i> | RM |
| Ciconiiformes | Ardeidae | Purple Heron | <i>Ardea purpurea</i> | RM |
| Ciconiiformes | Ardeidae | Grey Heron | <i>Ardea cinerea</i> | RM |
| Ciconiiformes | Ardeidae | Black-crowned Night-Heron | <i>Nycticorax nycticorax</i> | R |
| Ciconiiformes | Ardeidae | Indian Pond-Heron | <i>Ardeola grayii</i> | R |
| Ciconiiformes | Ardeidae | Cattle Egret | <i>Bubulcus ibis</i> | RM |
| Ciconiiformes | Ardeidae | Median Egret | <i>Mesophox intermedia</i> | RM |
| Ciconiiformes | Ardeidae | Little Egret | <i>Egretta garzetta</i> | R |
| Ciconiiformes | Ardeidae | Chestnut Bittern | <i>Ixobrychus sinensis</i> | RM |
| Ciconiiformes | Ciconiidae | Painted Stork | <i>Mycteria leucocephala</i> | RM |
| Ciconiiformes | Ciconiidae | Asian Openbill-Stork | <i>Anastomus ositans</i> | R |
| Ciconiiformes | Ciconiidae | White-necked Stork | <i>Ciconia episcopus</i> | R |
| Ciconiiformes | Threskiornithidae | Black Ibis | <i>Pseudibis papillosa</i> | R |
| Ciconiiformes | Threskiornithidae | Oriental White Ibis | <i>Threskoinis melanocephalus</i> | R |
| Anseriformes | Anatidae | Brahminy Shelduck | <i>Tadornaferruginea</i> | RM |
| Anseriformes | Anatidae | Lesser Whistling-Duck | <i>Dendrocygna javanica</i> | R |
| Anseriformes | Anatidae | Northern Pintail | <i>Anas acuta</i> | M |
| Anseriformes | Anatidae | Common Teal | <i>Anas crecca</i> | M |
| Anseriformes | Anatidae | Spot-billed Duck | <i>Anas poecilorhyncha</i> | RM |
| Anseriformes | Anatidae | Gadwall | <i>Anas strepera</i> | M |
| Anseriformes | Anatidae | Eurasian Wigeon | <i>Anas penelope</i> | M |
| Anseriformes | Anatidae | Northern Shoveller | <i>Anas clypeata</i> | M |
| Anseriformes | Anatidae | Garganey | <i>Anas querquedula</i> | M |
| Anseriformes | Anatidae | Red-crested Pochard | <i>Rhodonessa rufina</i> | M |
| Anseriformes | Anatidae | Common Pochard | <i>Aythya ferina</i> | M |
| Falconiformes | Accipitridae | Black-shouldered Kite | <i>Elanus caeruleus</i> | R |
| Falconiformes | Accipitridae | Oriental Honey-Buzzard | <i>Pernis ptilorhynchus</i> | RM |
| Falconiformes | Accipitridae | Black Kite | <i>Milvius migrans</i> | R |
| Falconiformes | Accipitridae | Shikra | <i>Accipiter badius</i> | R |
| Falconiformes | Accipitridae | White-eyed Buzzard | <i>Butastur teesa</i> | R |
| Falconiformes | Accipitridae | Crested Serpent-Eagle | <i>Spilornis cheela</i> | R |
| Falconiformes | Accipitridae | Osprey | <i>Pandion haliaetus</i> | RM |
| Falconiformes | Falconidae | Common Kestrel | <i>Falco tinnunculus</i> | RM |
| Galliformes | Phasianidae | Common Quail | <i>Coturnix coturnix</i> | RM |

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|-----------------|------------------|---------------------------------|-----------------------------------|----|
| Galliformes | Phasianidae | Jungle Bush-Quail | <i>Perdicula asiatica</i> | R |
| Galliformes | Phasianidae | Grey Francolin | <i>Francolinus pondicerianus</i> | R |
| Galliformes | Phasianidae | Indian Peafowl | <i>Pavo cristatus</i> | R |
| Gruiformes | Rallidae | Brown Crane | <i>Amaurornis akool</i> | R |
| Gruiformes | Rallidae | White-breasted Waterhen | <i>Amaurornis phoenicurus</i> | R |
| Gruiformes | Rallidae | Common Moorhen | <i>Gallinula chloropus</i> | RM |
| Gruiformes | Rallidae | Purple Moorhen | <i>Porphyrio porphyria</i> | R |
| Gruiformes | Rallidae | Common Coot | <i>Fulica atra</i> | RM |
| Charadriiformes | Jacaniidae | Bronze-winged Jacana | <i>Metropidius indicus</i> | R |
| Charadriiformes | Jacaniidae | Pheasant-tailed Jacana | <i>Hydrophasianus chirurgus</i> | R |
| Charadriiformes | Recurvirostridae | Black-winged Stilt | <i>Himantopus himantopus</i> | R |
| Charadriiformes | Burhinidae | Stone-Curlew | <i>Burhinus oedicephalus</i> | R |
| Charadriiformes | Charadriidae | River Lapwing | <i>Vanellus duvaucelli</i> | R |
| Charadriiformes | Charadriidae | Red-wattled lapwing | <i>Vanellus indicus</i> | R |
| Charadriiformes | Charadriidae | Yellow-wattled Lapwing | <i>Vanellus malabaricus</i> | R |
| Charadriiformes | Scolopacidae | Common Snipe | <i>Gallinago stenura</i> | RM |
| Charadriiformes | Scolopacidae | Wood Sandpiper | <i>Tringa glareola</i> | M |
| Charadriiformes | Scolopacidae | Common Sandpiper | <i>Actitis hypoleucos</i> | RM |
| Charadriiformes | Charadriidae | Little Ringed Plover | <i>Charadrius dubius</i> | RM |
| Charadriiformes | Laridae | Common Tern | <i>Sterna caspia</i> | RM |
| Charadriiformes | Laridae | River Tern | <i>Sterna aurantia</i> | R |
| Columbiformes | Columbidae | Yellow-legged Green-Pigeon | <i>Treron phoenicoptera</i> | R |
| Columbiformes | Columbidae | Blue Rock Pigeon | <i>Columba livia</i> | R |
| Columbiformes | Columbidae | Eurasian Collared-Dove | <i>Streptopelia decaocto</i> | R |
| Columbiformes | Columbidae | Oriental Turtle-Dove | <i>Streptopelia orientalis</i> | RM |
| Columbiformes | Columbidae | Red Collared-Dove | <i>Streptopelia tranquebarica</i> | R |
| Columbiformes | Columbidae | Spotted Dove | <i>Streptopelia chinensis</i> | R |
| Columbiformes | Columbidae | Little Brown Dove | <i>Streptopelia senegalensis</i> | R |
| Psittaciformes | Psittacidae | Rose-ringed Parakeet | <i>Psittacula krameri</i> | R |
| Psittaciformes | Psittacidae | Alexandrine Parakeet | <i>Psittacula eupatria</i> | R |
| Psittaciformes | Psittacidae | Plum-headed Parakeet | <i>Psittacula cyanocephala</i> | R |
| Cuculiformes | Cuculidae | Common Cuckoo | <i>Cuculus canorus</i> | RM |
| Cuculiformes | Cuculidae | Pied Crested Cuckoo | <i>Clamator jacobinus</i> | RM |
| Cuculiformes | Cuculidae | Asian Koel | <i>Eudynamis scolopacea</i> | R |
| Cuculiformes | Cuculidae | Greater Coucal | <i>Centropus sinensis</i> | R |
| Strigiformes | Tytonidae | Barn Owl | <i>Tyto alba</i> | R |
| Strigiformes | Striginae | Collared Scops-Owl | <i>Otus bakkamoena</i> | R |
| Strigiformes | Striginae | Spotted Owlet | <i>Athene brama</i> | R |
| Apodiiformes | Apodidae | House Swift | <i>Apus affinis</i> | RM |
| Coraciiformes | Alcedinidae | Lesser Pied Kingfisher | <i>Ceryle rudis</i> | R |
| Coraciiformes | Alcedinidae | Small Blue Kingfisher | <i>Alcedo meninting</i> | R |
| Coraciiformes | Alcedinidae | Stork-billed Kingfisher | <i>Halcyon capensis</i> | R |
| Coraciiformes | Alcedinidae | White-breasted Kingfisher | <i>Halcyon pileata</i> | R |
| Coraciiformes | Meropidae | Chestnut-headed Bee-eater | <i>Merops leschenaultia</i> | R |
| Coraciiformes | Meropidae | Green Bee-eater | <i>Merops orientalis</i> | R |
| Coraciiformes | Meropidae | Blue-tailed Bee-eater | <i>Merops philippinus</i> | RM |
| Coraciiformes | Coraciidae | Indian Roller | <i>Coracias garrulus</i> | R |
| Coraciiformes | Upupidae | Common Hoopoe | <i>Upupa epops</i> | RM |
| Coraciiformes | Bucerotidae | Indian Grey Hornbill | <i>Ocyrceros birostris</i> | R |
| Piciformes | Capitonidae | Coppersmith Barbet | <i>Megalaima haemacephala</i> | R |
| Piciformes | Picidae | Eurasian Wryneck | <i>Jynx torquilla</i> | M |
| Piciformes | Picidae | Yellow-fronted Pied Woodpecker | <i>Dendrocopos mahrattensis</i> | R |
| Piciformes | Picidae | Black-shouldered Woodpecker | <i>Chrysocolaptes festivus</i> | R |
| Piciformes | Picidae | Lesser Golden-backed Woodpecker | <i>Dinopium benghalense</i> | R |
| Passeriformes | Aludidae | Singing Bush-lark | <i>Mirafra cantillans</i> | R |
| Passeriformes | Aludidae | Rufous-tailed Finch-Lark | <i>Ammomanes phoenicurus</i> | R |
| Passeriformes | Hirundinidae | Dusky Crag-Martin | <i>Hirundo concolor</i> | R |
| Passeriformes | Hirundinidae | Common Swallow | <i>Hirundo rustica</i> | RM |
| Passeriformes | Hirundinidae | Streak-Throated Swallow | <i>Hirundo fluvicola</i> | R |
| Passeriformes | Hirundinidae | Wire-tailed Sallow | <i>Hirundo smithii</i> | R |
| Passeriformes | Daniidae | Bay-backed Shrike | <i>Lanius vittatus</i> | R |
| Passeriformes | Daniidae | Rufous-backed Shrike | <i>Lanius schach</i> | R |
| Passeriformes | Daniidae | Brown Shrike | <i>Lanius cristatus</i> | M |
| Passeriformes | Oriolidae | Eurasian Golden Oriole | <i>Oriolus chinensis</i> | RM |

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|---------------|---------------|-----------------------------------|-----------------------------------|----|
| Passeriformes | Oriolidae | Black-headed Oriole | <i>Oriolus xanthornus</i> | R |
| Passeriformes | Dicruridae | Black Drongo | <i>Dicrurus macrocercus</i> | R |
| Passeriformes | Dicruridae | White-bellied Drongo | <i>Dicrurus caerulescens</i> | R |
| Passeriformes | Sturnidae | Rosy Starling | <i>Sturnus roseus</i> | M |
| Passeriformes | Sturnidae | Brahminy Starling | <i>Sturnus pagodarum</i> | R |
| Passeriformes | Sturnidae | Common Myna | <i>Acridotheres tritis</i> | R |
| Passeriformes | Sturnidae | Grey-headed Starling | <i>Sturnus malabaricus</i> | R |
| Passeriformes | Sturnidae | Asian Pied Starling | <i>Sturnus contra</i> | R |
| Passeriformes | Corvidae | Indian Treepie | <i>Dendrocitta vagabunda</i> | R |
| Passeriformes | Corvidae | House Crow | <i>Corvus splendens</i> | R |
| Passeriformes | Corvidae | Jungle Crow | <i>Corvus macrorhynchos</i> | R |
| Passeriformes | Campephagidae | Common Woodshrike | <i>Tephrodornis pondicerianus</i> | R |
| Passeriformes | Campephagidae | Small Minivet | <i>Pericrocotus cinnamomeus</i> | R |
| Passeriformes | Irenidae | Common Iora | <i>Aegithina tiphia</i> | R |
| Passeriformes | Pycnonotidae | Red-vented Bulbul | <i>Pycnonotus cafer</i> | R |
| Passeriformes | Pycnonotidae | White-browed Bulbul | <i>Pycnonotus luteotus</i> | R |
| Passeriformes | Timaliinae | Yellow-eyed Babbler | <i>Chrysomma sinense</i> | R |
| Passeriformes | Timaliinae | Large Grey Babbler | <i>Turdoides malcolmi</i> | R |
| Passeriformes | Timaliinae | Jungle Babbler | <i>Turdoides striatus</i> | R |
| Passeriformes | Muscicapinae | Asian Brown Flycatcher | <i>Muscicapa dauurica</i> | RM |
| Passeriformes | Muscicapinae | Red-throated Flycatcher | <i>Ficedula parva</i> | M |
| Passeriformes | Muscicapinae | Blue-throated Flycatcher | <i>Cyornis rubeculoides</i> | R |
| Passeriformes | Muscicapinae | Tickell's Blue-Flycatcher | <i>Cyornis tickelliae</i> | R |
| Passeriformes | Muscicapinae | Asian Paradise-Flycatcher | <i>Terpsiphone paradisi</i> | RM |
| Passeriformes | Muscicapinae | Verditer Flycatcher | <i>Emyias albicaudata</i> | R |
| Passeriformes | Muscicapinae | Black-naped Monarch-Flycatcher | <i>Hypothymis azurea</i> | R |
| Passeriformes | Muscicapinae | White-throated Fantail-Flycatcher | <i>Rhipidura aureola</i> | R |
| Passeriformes | Cisticolidae | Plain Prinia | <i>Prinia inornata</i> | R |
| Passeriformes | Cisticolidae | Ashy Prinia | <i>Prinia socialis</i> | R |
| Passeriformes | Cisticolidae | Common Tailorbird | <i>Orthotomus sutorius</i> | R |
| Passeriformes | Sylviinae | Indian Great Reed-Warbler | <i>Acrocephalus stentoreus</i> | R |
| Passeriformes | Sylviinae | Sulphur-bellied Warbler | <i>Phylloscopus griseolus</i> | R |
| Passeriformes | Sylviinae | Greenish Leaf -Warbler | <i>Phylloscopus trochiloides</i> | M |
| Passeriformes | Sylviinae | Common Lesser Whitethroat | <i>Sylvia curruca</i> | M |
| Passeriformes | Sylviinae | Booted warbler | <i>Hippolais caligata</i> | RM |
| Passeriformes | Turdinae | Oriental Magpie-Robin | <i>Copsychus saularis</i> | R |
| Passeriformes | Turdinae | Black Redstart | <i>Phoenicurus ochruros</i> | RM |
| Passeriformes | Turdinae | Indian Chat | <i>Cercomela furca</i> | R |
| Passeriformes | Turdinae | Pied Bushchat | <i>Saxicola caprata</i> | R |
| Passeriformes | Turdinae | Indian Robin | <i>Saxicoloides fulicata</i> | R |
| Passeriformes | Turdinae | White-throated Thrush | <i>Zosterops citrine cyanotus</i> | R |
| Passeriformes | Motacillidae | Blyth's Pipit | <i>Anthus godlewskii</i> | RM |
| Passeriformes | Motacillidae | Tawny Pipit | <i>Anthus campestris</i> | R |
| Passeriformes | Motacillidae | Oriental Tree Pipit | <i>Anthus hodgsoni</i> | RM |
| Passeriformes | Motacillidae | Yellow Wagtail | <i>Motacilla flava</i> | RM |
| Passeriformes | Motacillidae | Grey Wagtail | <i>Motacilla cinerea</i> | M |
| Passeriformes | Motacillidae | White Wagtail | <i>Motacilla alba</i> | RM |
| Passeriformes | Motacillidae | Large Pied Wagtail | <i>Motacilla maderaspatensis</i> | R |
| Passeriformes | Nectariniidae | Purple-rumped Sunbird | <i>Nectarinia zeylonica</i> | R |
| Passeriformes | Nectariniidae | Purple Sunbird | <i>Nectarinia asiatica</i> | R |
| Passeriformes | Zosteropidae | Oriental White Eye | <i>Zosterops palpebrosus</i> | R |
| Passeriformes | Passerinae | Yellow-throated Sparrow | <i>Petronia xanthocollis</i> | R |
| Passeriformes | Passerinae | House Sparrow | <i>Passer domesticus</i> | R |
| Passeriformes | Ploceidae | Baya Weaver | <i>Ploceus philippinus</i> | R |
| Passeriformes | Estrildidae | Red Munia | <i>Amandava formosa</i> | R |
| Passeriformes | Estrildidae | Spotted Munia | <i>Lonchura punctulata</i> | R |
| Passeriformes | Estrildidae | White-throated Munia | <i>Lonchura malabarica</i> | R |
| Passeriformes | Emberizidae | Red-headed Bunting | <i>Emberiza bruniceps</i> | RM |
| Passeriformes | Emberizidae | Black-headed Bunting | <i>Emberiza melanocephala</i> | RM |

Note: R = Resident, RM = Resident Migrant, M = Migrant.

The overall checklist prepared shows that 161 different kinds of birds use Ambazari Lake and forest area for feeding and breeding activities.

Conclusion

Birds occupy almost all habitat types and diversity of birds often serves as a good indicator of overall diversity of the area. It makes us understand how birds are important for ecosystem. The diversity and abundance of 161 species show that all the birds are fairly distributed throughout the area.

The birds present in and around the Ambazari Lake are affected by many factors such as organic and inorganic pollution of water and land, disturbance by human activities and lack of maintenance of the lake, yet the avifauna of Ambazari Lake is diverse keeping in view the varied avifauna recorded. The project of conservation of the wetland into a Biodiversity Park has been undertaken by the State Government of Maharashtra, India; for the further protection of wetland biodiversity more plantation of trees were carried out at Ambazari by State Government to increase the forest cover.

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