

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

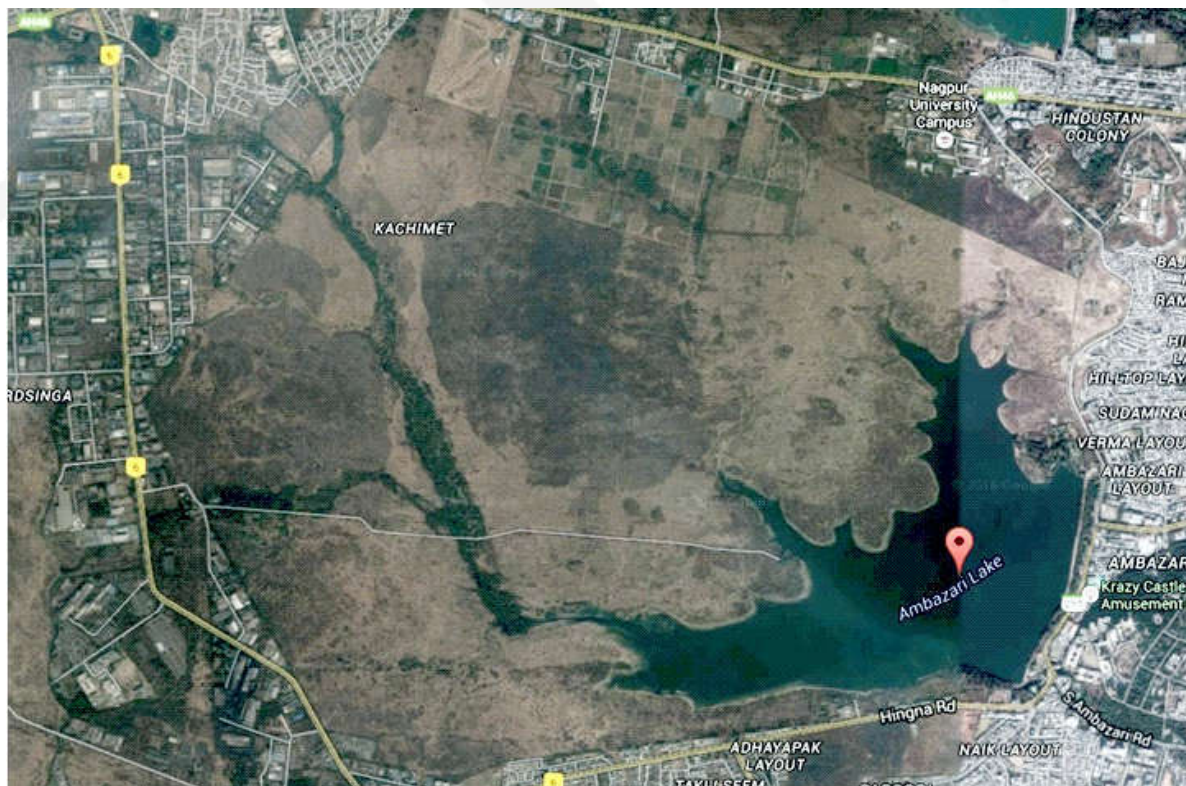
Coraciiforms, 8 species from Falconiforms, 7 species belong to Columbiforms, 5 species from Piciforms and Gruiforms each, 4 species belong to Cuculiforms and Galliforms, 3 species belong to Pelecaniforms, Psittaciforms, Strigiforms each and 1 species belong to Podicipediforms and Apodiforms each (Table 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)

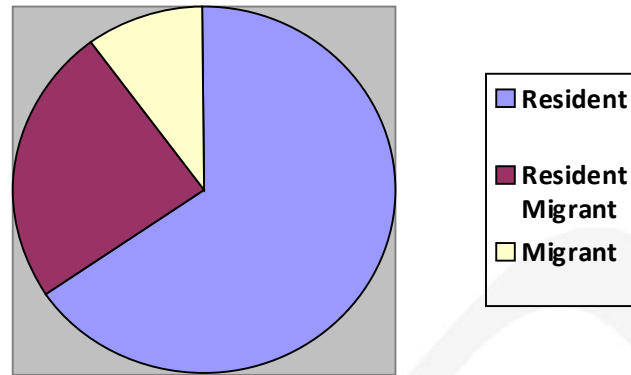


Fig. 1: Comparison of relative abundance of bird species along the study area (with reference to Table 1).

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>Mesophoyx 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>Tadorna ferruginea</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>Milvus migrans</i>	R
Falconiformes	Accipitridae	Shikra	<i>Accipiter badius</i>	R
Falconiformes	Accipitridae	White-eyed Buzzard	<i>Buteo 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
Galliformes	Phasianidae	Jungle Bush-Quail	<i>Perdica asiatica</i>	R

Galliformes	Phasianidae	Common Quail	<i>Coturnix coturnix</i>	RM
Galliformes	Phasianidae	Jungle Bush-Quail	<i>Perdica 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 oedipnemus</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
Apodiformes	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
Passeriformes	Oriolidae	Black-headed Oriole	<i>Oriolus xanthornus</i>	R

Passeriformes	Oriolidae	Eurasian Golden Oriole	<i>Oriolus chinensis</i>	RM
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 caeruleus</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>Eumyias 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 ochrurus</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 xanthocolis</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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