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Survey of Avifauna of Bahula Dam and its Nearby Areas of Pachora, Jalgaon, Maharashtra, India

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Abstract: Birds play a significant role in many ecosystems by providing a variety of ecological services. Birds eat pests, pollinate flowers, disperse seeds, scavenge carrion, cycle nutrients, and change the environment for the benefit of other species. In this study attempt has been made to record bird diversity at Bahula Dam and its nearby area during January 2020 to June 2021. This is the first avifauna report of Bahula dam and its nearby area. In the survey study total 108 species including water and the land birds were recorded belonging to 16 avifaunal orders and 46 families. Order Passeriformes is dominant in the study area, including 23 families and 44 species (40%), followed by Ciconiiformes with 3 families and 11 species (10%), Ansariiformes with 1 family and 9 species (8%), Coraciiformes with 4 families and 7 species (6%), Charadriiformes with 4 families and 6 species (5%), This survey study represents that species diversity is abundant in spite of many anthropogenic activities. More studies are required to make a complete list of available bird species of this area.

Keywords: Bird diversity, Bahula Dam Pachora, Jalgaon, Passeriformes, Ciconiiformes, Ansariiformes, Coraciiformes, Charadriiformes

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Introduction

Birds fulfil many ecological functions in their habitats. For instance, they are bioindicators of healthy ecosystems (Slabbekoorn and Ripmeester, 2008). Occurrence of birds, their diversity and population serves as an important tool to study the health of an area and to assess habitat alterations (Kuruvilla and Maria, 2017). The superficial open water and marshy area supports a variety of aquatic and semi-aquatic vegetation that offers an adequate food spectrum and good habitation for the living of the wetland birds (Arya *et al.*, 2014).

Biodiversity of a particular place is an indicator of the availability of the environmental resources, their distribution and consumption by the organisms in that habitat. The availability, distribution and reach to the bio-physical resources of a particular habitat are major factors for the species variety and their existence in that region (Kumar and Sahu, 2020). Assessment of bird community has become an important tool for conservation of biodiversity of any area with high anthropogenic pressure (Ko-shelev *et al.*, 2019).

Birds are also important in plant pollination as proven by sunbirds, which participate in crossbreeding of flowering plants, especially those with bird-pollination syndrome (Judd, 2008). 117 species of birds belonging to 42 families reported by Roy *et al.*, (2011) from Neora Valley National Park, West Bengal, India. 183 species belonging to 15 orders and 48 families reported by Raje *et al.* (2013) from Chiplun Town (M.S.).

As documentation of avifaunal diversity in Bahula Dam and its nearby areas is lacking. Thus, an attempt has been made in the present study focussing on documentation of avifaunal diversity in Bahula Dam and its nearby areas. The present study provided significant bird records in the study site and provided a baseline data for future study with reference to conservation in Bahula Dam and its nearby areas.

Materials and Methods

The Bahula Dam (Fig. 1) is an earth-fill dam build on the Bahula River near Pachora, Jalgaon (20° 41' 36.94" N, 75° 23' 47.74" E), Maharashtra, India.

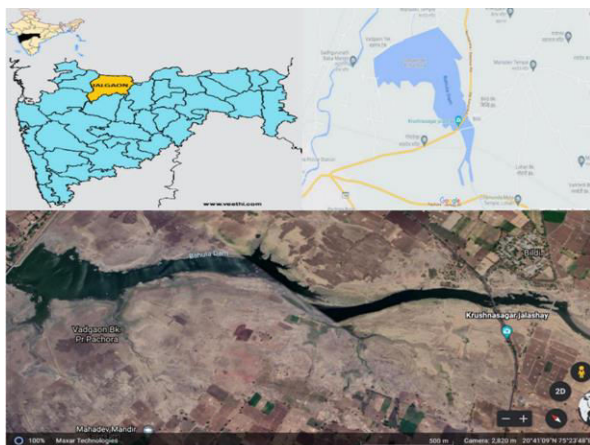


Fig. 1: Map of Bahula Dam and its nearby areas, Pachora, Jalgaon, Maharashtra, India.

Nikon Aculon A211, 10 x 50 Binocular was used for close observation of birds. For photography, Nikon Coolpix B700 camera was used. The photo sampling was done between 6.30 to 11.00 h and 16.30 to 18.30 h during January 2020 to June 2021. Regular field visits were made throughout this period. Bird specimens were not collected, and the study was based on observations, photographs, video and audio

recordings. Internet Birds database and other relevant literature (Ali, 2002; Grimmett *et al.*, 2011) were used for identification of birds.

Birds are categorised as Resident (R) and Winter Migrant (WM) based on their ecological status (Fig. 2). The avifauna was also categorised as per the IUCN status as LC = Least Concern species; NT = Near Threatened species; VU = Vulnerable species; T = Threatened species; EN = Endangered species; CR = critically endangered species; EX = Extinct species. In the present survey study, four species were found (NT), one species (VU) and the majority of species were of LC status.

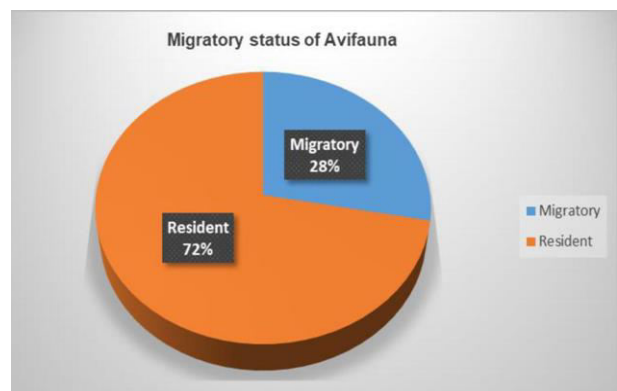


Fig. 2: Migratory status of Avifauna of Bahula Dam.

According to IUCN norms, no species from the EN and CR category were found. For enlisting, common English name and scientific names of Birds from the Indian Subcontinent (Mankadan and Pittie, 2004) were used.

Results and Discussion

In the present avifaunal diversity study various habitats especially the water bodies of River Bhuala and its nearby area were observed for sighting the birds. In the survey study total 108 species (Table 1; Fig. 3) including water and the land birds were recorded belonging to 16 avifaunal orders and 46 families. Order Passeriformes was dominant in the study area, including 23 families and 44 species (41%), followed by Ciconiiformes with 3 families and 11 species (10%), Ansariiformes with 1 family and 9 species (8%), Coraciiformes with 4 families and 7 species (6%), Charadriiformes with 4 families and 6 species (6%), Falconiformes with 1 family and

Table1: Avifaunal diversity of Bahula Dam and its nearby areas, Pachora, Jalgaon, Maharashtra, India

S. No.	Request and Family	Common Name	Scientific Name	Ecological Status	IUCN Status
1.	Podicipediformes				
	1. Podicipedidae	1. Little Grebe	<i>Tachybaptus ruficollis</i> (Pallas, 1764)	WM	LC
2.	Ciconiformes				
	2. Ardeidae	2. Indian Pond Heron	<i>Ardeola grayii</i> (Sykes, 1832)	R	LC
		3. Grey Heron	<i>Ardea cinerea</i> (Linnaeus, 1758)	WM	LC
		4. Median Egret	<i>Mesophoyx intermedia</i> (Wagler, 1829)	R	LC
		5. Large Egret	<i>Casmerodius albus</i> (Linnaeus, 1758)	R	LC
		6. Little Egret	<i>Egretta garzetta</i> (Linnaeus, 1766)	R	LC
		7. Cattle Egret	<i>Bubulcus ibis</i> (Linnaeus, 1758)	R	LC
	3. Ciconidae	8. Asian Open bill Stork	<i>Anastomus oscitans</i> (Boddaert, 1783)	R	LC
		9. Black Necked Stork	<i>Ephippiorhynchus asiaticus</i> (Linn.,1790)	WM	NT
		10. painted stork	<i>Mycteria leucocephala</i>	WM	NT
	4. Threskiornithidae	11. Indian Black Ibis	<i>Pseudibis papillosa</i> (Temminck, 1824)	WM	LC
		12. Black Headed Ibis	<i>Threskiornis melanocephalus</i> (Latham, 1790)	R	NT
3.	Ansariformes				
	5. Anatidae	13. Northern Pintail	<i>Anas acuta</i> (Linnaeus, 1758)	WM	LC
		14. Eurasian teal	<i>Anas crecca</i> (Linnaeus, 1758)	WM	LC
		15. Lesser whistling duck	<i>Dendrocygna javanica</i> (Horsfield, 1821)	WM	LC
		16. Gadwall	<i>Mareca strepera</i> (Linnaeus, 1758)	WM	LC
		17. Tufted duck	<i>Aythya fuligula</i> (Linnaeus, 1758)	WM	LC
		18. Rosy Shelduck	<i>Tadorna ferruginea</i> (Pallas, 1764)	WM	LC
		19. Spot Billed Duck	<i>Anas poicillorhyncha</i> (Forster JR,1781)	R	LC
		20. Red Crested Pochard	<i>Netta rufina</i> (Pallas, 1773)	WM	LC
		21. Common Pochard	<i>Aythya farina</i> (Linnaeus, 1758)	WM	LC
4.	Falconiformes				
	6. Accipitridae	22. Black Shouldered Kite	<i>Elanus caeruleus</i> (Desfontaines, 1789)	R	LC

		23. Shikra	<i>Accipiter badius</i> (Gmelin, 1788)	R	LC
5.	Gruiformes				
	7. Rallidae	24. Purple Moorhen	<i>Porphyrio porphyrio</i> (Linnaeus, 1758)	R	LC
		25. Common Moorhen	<i>Gallinula chloropus</i> (Linnaeus, 1758)	R	LC
		26. Common Coot	<i>Fulica atra</i> (Linnaeus, 1758)	R	LC
		27. White Breasted Waterhen	<i>Amauromis phoenicurus</i> (Pennant, 1769)	R	LC
6.	Pelecaniformes				
	8 Phalacrocoracidae	28. Greater Cormorant	<i>Phalacrocorax carbo</i> (Vieillot, 1817)	R	LC
		29. Red-naped Ibis	<i>Pseudibis papillosa</i> (Temminck, 1824)	R	LC
		30. Indian Cormorant	<i>Phalacrocorax fuscicollis</i> (Stephans, 1826)	R	LC
		31. Little Cormorant	<i>Phalacrocorax niger</i> (Vieillot, 1817)	R	LC
	9. Anhingidae	32. Darter	<i>Anhinga melanogaster</i> (Flag, 1769)	R	NT
7.	Charadriiformes				
	10. Recurvirostridae	33. Black Winged Stilt	<i>Himantopus himantopus</i> (Linnaeus, 1758)	WM	LC
	11. Charadriidae	34. Little ringed plover	<i>Charadrius dubius</i> (Scopoli, 1786)	WM	LC
		35. Red Wattled Lapwing	<i>Venellus indicus</i> (Linnaeus, 1758)	R	LC
	12. Scolopacidae	36. Common Sandpiper	<i>Actitis hypoleucos</i> (Linnaeus, 1758)	WM	LC
		37. Wood Sandpiper	<i>Tringa glareola</i> (Linnaeus, 1758)	WM	LC
	13. Sternidae	38. Indian river tern	<i>Sterna aurantia</i> (J.E. Grey, 1831)	R	UV
8.	Coraciiformes				
	14. Alcedinidae	39. Lesser Pied Kingfisher	<i>Ceryle rudis</i> (Linnaeus, 1758)	R	LC
		40. Common Kingfisher	<i>Alcedo atthis</i> (Linnaeus, 1758)	R	LC
		41. White Breasted Kingfisher	<i>Halcyon smyrnensis</i> (Linnaeus, 1758)	R	LC
	15. Meropidae	42. Little Green Bee eater	<i>Merops orientalis</i> (Latham, 1801)	R	LC
		43. Blue tail Beater	<i>Coracias benghalensis</i> (Linnaeus, 1758)	WM	LC
	16. Coraciidae	44. Indian Roller	<i>Coracias benghalensis</i> (Linnaeus, 1758)	R	LC
	17. Upupidae	45. Common hoopoe	<i>Upupa epops</i> (Linnaeus, 1758)	R	LC
9.	Columbiformes				
	18. Columbidae	46 Laughing Dove	<i>Streptopelia senegalensis</i> (Linnaeus, 1766)	R	LC
		47. Spotted Dove	<i>Streptopelia chinensis</i> (Scopoli, 1786)	R	LC

		48. Rock Pigeon	<i>Columba livia</i> (J. F. Gmelin, 1789)	R	LC
10.	Psittaciformes				
	19. Psittacidae	49. Rose Ringed Parakeet	<i>Psittacula krameri</i> (Scopoli, 1769)	R	LC
		50. Blossom Headed parakeet	<i>Psittacula roseate</i> (Biswas, 1952)	R	LC
		51. Plum-headed parakeet	<i>Psittacula cyanocephala</i> (Linnaeus, 1766)	R	LC
11.	Cuculiformes				
	20. Cuculidae	52. Pied Cuckoo	<i>Clamator jacobinus</i> (Boddaert, 1783)	R	LC
		53. Greater Coucal	<i>Centropus sinensis</i> (Stephens, 1815)	R	LC
		54. Common Cuckoo	<i>Cuculus canorus</i> (Linnaeus, 1758)	R	LC
		55. Asian koel	<i>Eudynamis scolopaceus</i> (Linnaeus, 1758)	R	LC
		56. Grey-bellied Cuckoo	<i>Cacomantis passerinus</i>	R	LC
		57. Common Hawk-Cuckoo	<i>Hierococcyx varius</i> (Vahl, 1797)	R	LC
12.	Apodiformes				
	21. Apodidae	58. Little Swift	<i>Apus affinis</i> (J. E. Dim, 1830)	R	LC
		59. Common Swift	<i>Apus apus</i> (Linnaeus, 1758)	R	LC
		60. Asian palm quick	<i>Cypsiurus balasinesis</i> (J.E. Gray, 1829)	R	LC
13.	Strigiformes				
	22. Strigidae	61. Spotted Owlet	<i>Athene brama</i> (Temminck, 1821)	R	LC
14.	Bucerotiformes				
	23. Bucerotidae	62. Indian Gray Hornbill	<i>Ocyrceros birostris</i> (Scopoli, 1786)	R	LC
15.	Piciformes				
	24. Megalaimidae	63. Coppersmith Barbet	<i>Psilopogon haemacephalus</i> (Statius Müller, 1776)	R	LC
16.	Passeriformes				
	25. Dicruridae	64. Black Drongo	<i>Dicrurus macrocercus</i> (Vieillot, 1817)	R	LC
		65. Crow Billed Drongo	<i>Dicrurus annectans</i> (Hodgson, 1836)	R	LC
	26. Sturnidae	66. Brahminy Starling	<i>Sturnia pagodarum</i> (J F Gmelin, 1789)	R	LC
		67. Common Myna	<i>Acridotheres tristis</i> (Linnaeus, 1766)	R	LC
		68. Rosy starling	<i>Pastor roseus</i> (Linnaeus, 1758)	R	LC
	27. Corvidae	69. Jungle Crow	<i>Corvus macrorhynchos</i> (Wagler, 1827)	R	LC
		70. House Crow	<i>Corvus splendens</i> (Vieillot, 1817)	R	LC

		71. Rufous treepie	<i>Dendrocitta vagabunda</i> (Latham,1790)	R	LC
	28. Pycnonotidae	72. Red-Vented Bulbul	<i>Pycnonotus cafer</i> (Linnaeus, 1766)	R	LC
		73. Black headed bulbul	<i>Pycnonotus atriceps</i> (Temminck, 1822)	WM	LC
	29 Timaliidae	74. Jungle Babbler	<i>Turdoides striatus</i> (Dumont de Sainte Croix, 1823)	R	LC
		75. Large Gray Babbler	<i>Turdoides malcolmi</i> (Sykes, 1832)	R	LC
		76. Yellow Eyed Babbler	<i>Chrysomma sinense</i> (Gmelin, 1789)	R	LC
	30. Sylviinae	77. Ashy Wren Prinia	<i>Prinia socialis</i> (Sykes, 1832)	R	LC
		78. Plain Prinia	<i>Prinia inornata</i> (Sykes, 1832)	R	LC
		79. Grey breasted Prinia	<i>Prinia hodgsonii</i> (Blyth, 1844)	R	LC
	31. Turdinae	80. Oriental Magpie Robin	<i>Copsychus saularis</i> (Linnaeus, 1758)	R	LC
		81. Indian Robin	<i>Saxicoloides fulicata</i> (Linnaeus, 1776)	R	LC
		82. Pied Bushchat	<i>Saxicola caprata</i> (Linnaeus, 1766)	R	LC
	32. Motacillidae	83. Yellow wagtail	<i>Motacilla flava</i> (Linnaeus, 1758)	WM	LC
		84. White Wagtail	<i>Motacilla alba</i> (Linnaeus, 1758) (J F, Gmelin, 1789)	WM	LC
		85. White browed wagtail	<i>Motacilla aderspatensis</i> (J. F., Gmelin, 1789)	WM	LC
		86. Grey Wagtail	<i>Motacilla cinerea</i> (Tunstal, 1771)	WM	LC
		87. Yellow wagtail	<i>Motacilla flava</i> (Linnaeus, 1758)	WM	LC
	33. Nectariniidae	88. Crimson Sunbird	<i>Nectarina minima</i> (Sykes, 1832)	R	LC
		89. Purple Rumped sunbird	<i>Leptocoma zeylonica</i> (Linnaeus, 1766)	R	LC
	34. Passeridae	90. House Sparrow	<i>Passer domesticus</i> (Linnaeus, 1758)	R	LC
	35. Ploceidae	91. Baya weaver	<i>Ploceus philippinus</i> (Linnaeus, 1766)	R	LC
	36. Estrildidae	92. Chestnut Munia	<i>Lonchura atricapila</i> (Vieillot, 1807)	WM	LC
		93. White throated Munia	<i>Lonchura malabarica</i> (Linnaeus, 1758)	R	LC
		94. Textured Breasted Munia	<i>Lonchura punctulata</i> (Linnaeus, 1758)	R	LC
		95. Black Throated Munia	<i>Lonchura kelaarti</i> (Jerdon, 1863)	R	LC
	37. Laniidae	96. Long- tailed shrike	<i>Lanius schach</i> (Linnaeus, 1758)	WM	LC
	38. Muscicapidae	97. Black redstart	<i>Phoenicurus ochruros rufiventris</i> (S. G. Gmelin, 1774)	WM	LC
		98. Tickell's Blue Flycatcher	<i>Cyornis tickelliae</i> (Blyth, 1843)	R	LC

39. Acrocephalidae	99. Blyth's reed songbird	<i>Acrocephalus dumetorum</i> (Blyth, 1849)	WM	LC
40. Aegithinidae	100. Common Lora	<i>Aegithina tiphia</i> (Linnaeus, 1758)	R	LC
41. Rhipiduridae	101. Spot-breasted Fantail	<i>Rhipidura albogularis</i> (Lesson, 1831)	R	LC
42. Cisticolidae	102. Common Tailorbird	<i>Orthotomus sutoris</i> (Pennant, 1769)	R	LC
43. Hirundinidae	103. Red-rumped Swallow	<i>Cecropis daurica</i> (Laxmann, 1769)	WM	LC
	104 Wire-tailed Swallow	<i>Hirundo smithii</i> (Leach, 1818)	WM	LC
	105. Dusky Crag-Martin	<i>Ptyonoprogne concolor</i> (Sykes, 1832)	R	LC
44. Campephagidae	106. Small minivet	<i>Pericrocotus cinnamomeus</i> (1776)	R	LC
45. Zosteropidae	107. Indian white-eye	<i>Zosterops palpebrosus</i> (Temminck, 1824)	R	LC
46. Alaudidae	108. Common Crested Lark	<i>Galerida cristata</i> (Linnaeus, 1758)	R	LC

Ecological Status: R = Resident, WM = Winter Migrant.

IUCN= International Union for Conservation of Nature, LC= Lest Concern, VU = Vulnerable species NT= Near Threatened.

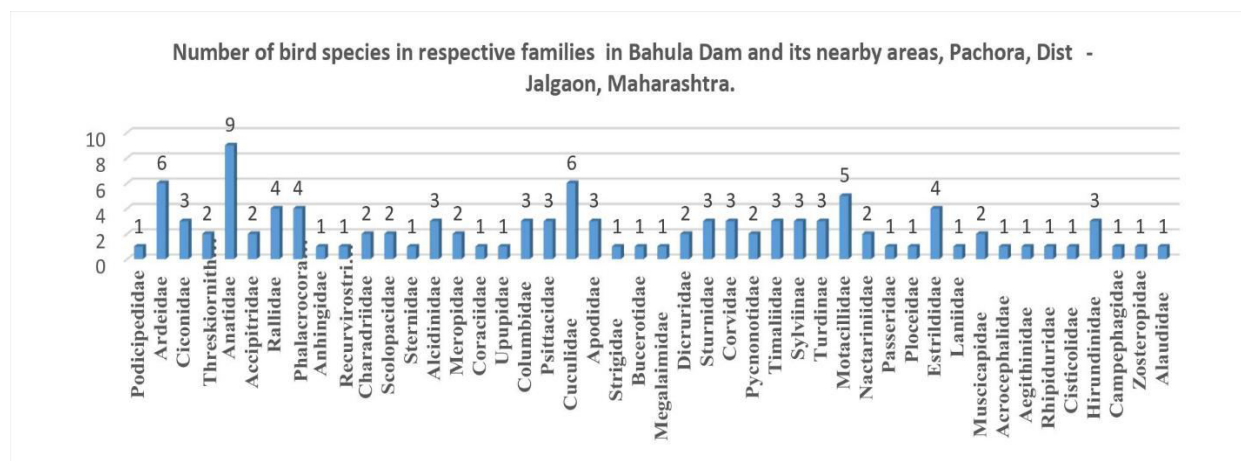


Fig. 3: Avifaunal diversity of Bahula Dam and its nearby areas, Pachora, Jalgaon.

1 species, Gruiformes with 1 family and 4 species, Pelecaniformes with 1 family and 4 species, Columbiformes with 1 family and 3 species, Psittaciformes with 1 family and 3 species, Cuculiformes with 1 family and 6 species, Apodiformes with 1 family and 3 species, Strigiformes with 1 family and 1 species, Bucerotiformes with 1 family and 1 species, Piciformes with 1 family and 1 species and Podicipediformes with 1 family and 1 species.

Darter species (*Anhinga melanogaster*) was observed searching food near dry weed in shallow water during afternoon. Black Necked Stork (*Ephippiorhynchus asiaticus*) and painted stork

(*Mycteria leucocephala*), are a species of stork which is under NT status, was observed during searching food. Black Headed Ibis (*Threskiornis melanocephalus*) were observed which is also under near threatened (NT) category. Indian River tern (*Sterna aurantia*) was observed which are under the vulnerable (UV) category of IUCN status. During entire observation period the tern species was flying close to stagnant water pool in river for a while and resting by sitting in coastal sand together with common egrets whistling ducks and cormorants. During the late March evening hour 17.00 h. and early morning 7.00 to 9.00 h, Asian open bill were observed in shallow water. They



Black Winged Stilt
(*Himantopus himantopus*)



Asian Open bill Stork
(*Anastomus oscitans*)



Common Coot
(*Fulica atra*)



Gadwall
(*Mareca strepera*)



Spot Billed Duck
(*Anas poicillorhyncha*)



Tufted duck
(*Aythya fuligula*)



Lesser whistling duck
(*Dendrocygna javanica*)



Common Kingfisher
(*Alcedo atthis*)



Little Egret
(*Egretta garzetta*)



Eurasian teal
(*Anas crecca*)



Indian Pond Heron
(*Ardea purpurea*)



Little Cormorant
(*Phalacrocorax niger*)



Northern Pintail
(*Anas acuta*)



Ruddy- Shelduck
(*Tadorna ferruginea*)



Indian river tern
(*Sterna aurantia*)



White-breasted waterhen
(*Amauornis phoenicurus*)



Little ringed plover
(*Charadrius dubius*)



Lesser Pied Kingfisher
(*Ceryle rudis*)



Red Wattled Lapwing
(*Vanellus indicus*)



White browed wagtail
(*Motacilla aderspatensis*)



Plate 1: Water and land birds with their common English names and Zoological names recorded in Bahula Dam and its nearby areas.

were finding bivalve in the shallow water using their long bill and one foot at the same time.

Bahula Dam have a shallow water in their backflow, because of that it provide good environment for growth of freshwater creatures, and ultimately it provides good food for winter migratory birds as well as its adjacent areas provides good food for resident birds. Passerine birds showed a broad range of feeding habits both in agricultural fields and grassland areas; hence they were less prone to habitat destruction and anthropogenic activities. The present bird diversity has been reported by capturing the quality photographs, 40 photographs of water and land birds (Plate 1) with their common English names and Zoological names. In the present study effort has been made to make bird diversity of Bahula Dam and its nearby areas more scientific by providing the photographs. But still there is a need of more surveys and observation to produce photographic evidences for few.

Conclusion

The present study of avifaunal diversity of Bahula Dam and its nearby areas, Pachora, Jalgaon, Maharashtra, India, provided that the site as suitable habitat for the residential and migratory birds. But the bird habitats of this area are affected by anthropogenic disturbances, and pollution due to spraying of insecticides on the crops, if such activities will continues in future the bird population of this area may decline.

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