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Avifaunal Diversity of Bisalpur Dam and nearby Area of Tehsil Deoli, District Tonk (Rajasthan), India

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Abstract: Avifauna is the term used for the birds of a particular region, habitat, or geological period. Study area covers foothills of beautiful Aravali ranges. It is one of the world's oldest mountain ranges. Bisalpur Dam is avifaunal diversity rich area situated in district Tonk, Rajasthan. Deoli is 165 Kms away from Jaipur, 85 Kms from Kota and 145 Kms from Ajmer. The dam was constructed between two mountains on Banas river for the purpose of drinking water and irrigation. This dam attracts human beings as well as birds also. Nesting spots are easy to find along the bank of Banas river. Visual encounter method and different methods were used for the study purpose. Identification was done with the help of field guide books. Total 176 species of birds belonging to different family were spotted in the study area.

Keywords: Avifauna, bisalpur, diversity, terrestrial and water birds

I. INTRODUCTION

Birds are excellent indicators of water quality and measures of biodiversity. The present study was conducted to understand the diversity measures of avifauna in and nearby places of Bisalpur dam.

A. Study Area

Study area is Bisalpur Dam and nearby area. Bisalpur dam is constructed on Banas river near tehsil Deoli, district Tonk, Rajasthan, India (Figure 1-4). The coordinates are 25°55'20.56" N & 75°27' 20.51" E. with an elevation of 1081 feet. The height of dam is 130 feet and length is 1883 feet; gross storage capacity is 1.10 KM³. Reservoir area is 218.36 KM². Effective storage capacity is 1.04 KM³. This Dam was completed in 1999. It supplies irrigation and drinking water for many towns of Rajasthan. Bisalpur dam and nearby area is rich in Avifaunal Diversity.

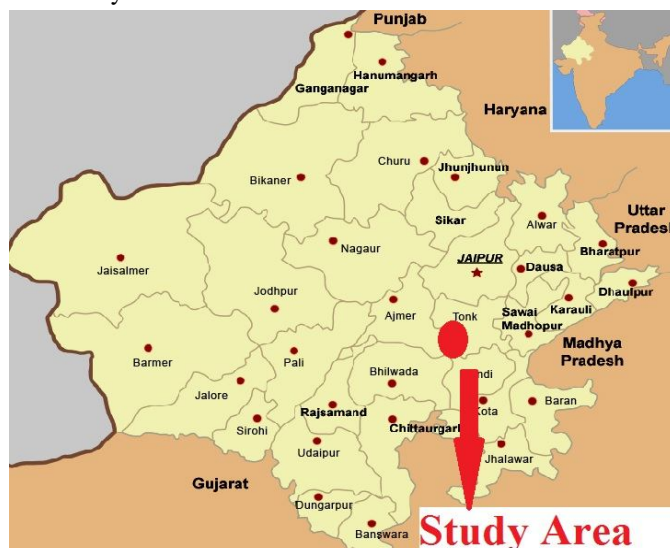


Figure 1: Study area in map

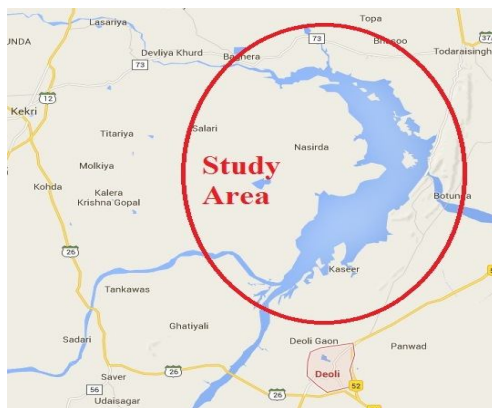


Figure 2: Study area in map (Enlarge)



Figure 3: Broad view of Bisalpur Dam



Figure 4: Flora at study area

II. MATERIALS & METHODOLOGY:

A. Materials

Different apparatus i.e. digital camera (Canon SX10, Canon 1200D), binoculars, field guide and observation sheets were used for the present study.

B. Survey

Regular surveys were made at different time interval between 05:00 to 22:00 Hrs.

The study was based on the survey of the area. Quantitative avifauna data was collected in the point count survey and combined with distance estimation with the help of binocular and camera. Bisalpur Dam and nearby area was selected as site for observation of avifauna. These areas are rich in avifaunal diversity. Periodical studies were made to know about the status of birds. Direct count methods were adopted from *Bibbey et al.* [1] and *Javad and Kaul* [2] for recording and analysis. Birds were identified with the help of field guide [3,4,5,6,7,8]. Visual encounter method was also used. Most of the birds species were spotted during the winter season. Regular surveys were made near the breeding grounds. Representative cases were photographed from different angles in the nature. Morphometric observations were also made for the taxonomic identification and compared with the standard diagnostic keys.

Birds were divided in three categories MC-most common, C-common, R-rare according to the number of individuals. We also described the IUCN status of the birds.

III. RESULT & DISCUSSION

Total 176 species of birds belonging to different family were present in the study area. Avifaunal diversity was divided into two categories one is water birds (Table 1) and another is terrestrial birds (Table 2) found near water bodies.

Table 1: List of water birds spotted in study area

S. No.	Scientific name	Common name	IUCN status	Migratory status	Population trend
	Anatidae				
1	Anser indicus, (Latham, 1790)	Bar-headed goose	Least Concern	Winter Visitor	Decreasing
2	Anas acuta, (Linnaeus, 1758)	Northern Pintail	Least Concern	Winter Visitor	Decreasing
3	Anas clypeata, (Linnaeus, 1758)	Northern shoveler	Least Concern	Winter Visitor	Decreasing
4	Anas crecca, (Linnaeus, 1758)	Eurasian teal/ Common Teal	Least Concern	Winter Visitor	Decreasing
5	Anas penelope, (Linnaeus, 1758)	Eurasian wigeon	Least Concern	Winter Visitor	Decreasing
6	Anas poecilorhyncha, (Forster, 1781)	Indian Spot-billed duck	Least Concern	Resident	Decreasing
7	Anas querquedula (Linnaeus, 1758)	Garganey	Least Concern	Winter Visitor	Decreasing
8	Anas strepera (Linnaeus, 1758)	Gadwall	Least Concern	Winter Visitor	Decreasing
9	Aythya ferina (Linnaeus, 1758)	Common Pochard	Vulnerable	Winter Visitor	Decreasing
10	Aythya fuligula, (Linnaeus, 1758)	Tufted duck	Least Concern	Winter Visitor	Stable
11	Aythya nyroca, (Güldenstädt, 1770)	Ferruginous pochard/ Ferruginous Duck	Near Threatened	Winter Visitor	Decreasing
12	Sarkidiornis melanotos, (Pennant, 1769)	Comb duck/ knob-billed duck	Least Concern	Resident	Decreasing
13	Tadorna ferruginea, (Pallas, 1764)	Ruddy shelduck	Least Concern	Winter Visitor	Stable
	Ardeidae				
14	Ardea alba, (Linnaeus, 1758)	Great Egret/ Great white Egret	Least Concern	Resident	stable
15	Ardea cinerea, (Linnaeus, 1758)	Grey heron	Least Concern	Resident	Stable
16	Ardea purpurea, (Linnaeus, 1766)	Purple heron	Least Concern	Resident	Decreasing
17	Ardeola grayii, (Sykes, 1832)	Indian Pond Heron	Least Concern	Resident	Increasing
18	Bubulcus ibis (Linnaeus, 1758)	Cattle Egret	Least Concern	Resident	Increasing
19	Butorides Striatus (Linnaeus, 1758)	Striated Heron	This taxon has not yet been assessed for the IUCN Red List, but is in the Catalogue of Life	Winter Visitor	Unknown
20	Egretta garzetta, (Linnaeus, 1766)	Little Egret	Least Concern	Resident	Increasing

21	Mesophoyx intermedia (Wagler, 1827)	Intermediate Egret	This taxon has not yet been assessed for the IUCN Red List, but is in the Catalogue of Life	Resident	Unknown
22	Nycticorax nycticorax, (Linnaeus, 1758)	Black-crowned night heron	Least Concern	Resident	Decreasing
	Cerylidae				
23	Ceryle rudis (Linnaeus 1758)	Pied Kingfisher	Least Concern	Winter Visitor	Decreasing
	Charadriidae				
24	Charadrius dubius (Scopoli, 1786)	Little ringed plover	Least Concern	Resident	Stable
25	Vanellus indicus (Boddaert, 1783)	Red-wattled lapwing	Least Concern	Resident	Increasing
26	Vanellus malabaricus (Boddaert, 1783)	Yellow-wattled lapwing	Least Concern	Resident	Stable
	Ciconiidae				
27	Anastomus oscitans (Boddaert, 1783)	Asian Open bill	Least Concern	Winter Visitor	Stable
28	Mycteria leucocephala (Pennant, 1769)	Painted stork	Near Threatened	winter Visitor	Decreasing
	Jacaniidae				
29	Hydrophasianus chirurgus (Scopoli, 1786)	Pheasant-tailed jacana	Least Concern	Resident	Decreasing
	Laridae				
30	Chroicocephalus brunnicephalus (Jerdon, 1840)	Brown Headed Gull	This taxon has not yet been assessed for the IUCN Red List, but is in the Catalogue of Life	Winter Visitor	Unknown
31	Chroicocephalus ridibundus (Linnaeus, 1766)	Black Headed gull	Least Concern	Winter Visitor	Decreasing
	Pelecanidae				
32	Pelecanus onocrotalus (Linnaeus, 1758)	Great white pelican/ Rosy pelican	Least Concern	Winter Visitor	Stable
33	Pelecanus crispus (Bruch, 1832)	Dalmatian pelican	Vulnerable	Winter Visitor	Decreasing
	Phalacrocoracidae				
34	Phalacrocorax carbo (Linnaeus, 1758)	Great Cormorant	Least Concern	Resident	Increasing
35	Phalacrocorax fuscicollis (Stephens, 1826)	Indian Cormorant	Least Concern	Resident	Stable
36	Phalacrocorax niger (Vieillot, 1817)	Little Cormorant	Least Concern	Resident	Stable
	Phoenicopteridae				
37	Phoenicopterus roseus (Linnaeus, 1758)	Greater Flamingo	Least Concern	Passage Visitor	Decreasing
	Podicipedidae				
38	Tachybaptus ruficollis (Pallas, 1764)	Little grebe	Least Concern	Resident	Decreasing
	Rallidae				

39	Amaurornis phoenicurus (Pennant, 1769)	White-breasted waterhen	Least Concern	Resident	Stable
40	Fulica atra (Linnaeus, 1758)	Common Coot / Eurasian coot	Least Concern	Resident	Decreasing
41	Gallinula chloropus (Linnaeus, 1758)	Common moorhen	Least Concern	Resident	Stable
42	Porphyrio Porphyrio (Linnaeus, 1758)	Purple swamp hen	Least Concern	Resident	Increasing
	Recurvirostridae				
43	Himantopus himantopus (Linnaeus, 1758)	Black-winged Stilt	Least Concern	Resident	Increasing
44	Recurvirostra avosetta (Linnaeus, 1758)	Pied avocet	Least Concern	Winter Visitor	Stable
	Rostratulidae				
45	Rostratula benghalensis (Linnaeus, 1758)	Greater Painted-snipe	Least Concern	Winter Visitor	Decreasing
	Scolopacidae				
46	Actitis hypoleucos (Linnaeus, 1758)	Common sandpiper	Least Concern	Winter Visitor	Decreasing
47	Calidris minuta (Leisler, 1812)	Little Stint	Least Concern	Winter Visitor	Decreasing
48	Calidris temminckii (Leisler, 1812)	Temminck's Stint	Least Concern	Winter Visitor	Unknown
49	Limosa limosa (Linnaeus, 1758)	Black-tailed godwit	Near Threatened	Winter Visitor	Decreasing
50	Philomachus pugnax (Linnaeus, 1758)	Ruff	Least Concern	Winter Visitor	Decreasing
51	Tringa erythropus (Pallas, 1764)	Spotted redshank	Least Concern	Winter Visitor	Stable
52	Tringa glareola (Linnaeus, 1758)	Wood sandpiper	Least Concern	Winter Visitor	Stable
53	Tringa nebularia (Gunnerus, 1767)	Common greenshank	Least Concern	Winter Visitor	Stable
54	Tringa ochropus (Linnaeus, 1758)	Green sandpiper	Least Concern	Winter Visitor	Stable
55	Tringa tetanus (Linnaeus, 1758)	Common redshank	Least Concern	Winter Visitor	Stable
	Sternidae				
56	Chlidonias hybridus, (Pallas, 1811)	Whiskered tern	Least Concern	Winter Visitor	Stable
57	Sterna aurantia (Gray, JE, 1831)	Indian River tern/ River tern	Near Threatened	Resident	Decreasing
	Threskiornithidae				
58	Platalea leucorodia (Linnaeus, 1758)	Eurasian spoonbill/ Common spoonbill	Least Concern	Winter Visitor	Stable
59	Pseudibis papillosa (Temminck, 1824)	Red-naped Ibis/ Black Ibis	Least Concern	Winter Visitor	Decreasing
60	Threskiornis melanocephalus (Latham, 1790)	Black-headed ibis/ Oriental white ibis	Near Threatened	Resident	Decreasing

Table 2: List of terrestrial birds spotted in study area

S. No.	Scientific name	Common name	IUCN status	Migratory status	Population trend
	Accipitridae				
1	Accipiter badius (Gmelin, 1788)	Shikra	Least Concern	Resident	Decreasing
2	Aquila nipalensis (Hadgson, 1833)	Steppe Eagle	Endangered	Resident	Decreasing
3	Buteo Rufinus (Cretzschmar, 1829)	Long Legged Buzzard	Least Concern	Resident	Stable
4	Circaetus gallicus (Gmelin, 1788)	Short-toed Snake-Eagle	Least Concern	Resident	Stable
5	Circus aeruginosus (Linnaeus, 1758)	Eurasian Marsh Harrier	Least Concern	Winter visitor	Increasing
6	Circus pygargus (Linnaeus, 1758)	Montagu's Harrier	Least Concern	Winter Visitor	Decreasing
7	Elanus caeruleus (Desfontaines, 1789)	Black-Winged Kite	Least Concern	Resident	Stable
8	Milvus migrans (Boddaert, 1783)	Black Kite	Least Concern	Resident	Stable
9	Neophron percnopterus (Linnaeus, 1758)	Egyptian Vulture	Endangered	Resident	Decreasing
10	Spilornis cheela (Latham, 1790)	Crested Serpent Eagle	Least Concern	Resident	Stable
	Aegithinidae				
11	Aegithina tiphia (Linnaeus, 1758)	Common Iora	Least Concern	Resident	Unknown
	Alaudidae				
12	Eremopterix grisea (Scopoli, 1786)	Ashy-crowned Sparrow-Lark	Least concern	Resident	Stable
13	Galerida cristata (Linnaeus, 1758)	Crested Lark	Least concern	Resident	Stable
14	Mirafr cantillans (Blyth, 1845)	Singing Bush-Lark	Least concern	Resident	Decreasing
15	Mirafr erythroptera (Blyth, 1845)	Indian Bush-Lark	Least concern	Resident	Stable
	Alcedinidae				
16	Alcedo atthis (Linnaeus, 1758)	Common Kingfisher	Least Concern	Resident	Decreasing
	Apodidae				
17	Apus affinis (John Edward Gray, 1830)	Little Swift / House Swift	Least concern	Resident	Stable
	Bucerotidae				
18	Ocyrceros birostris (Scopoli, 1786)	Indian Grey Hornbill	Least concern	Winter visitor	Decreasing
	Burhinidae				
19	Burhinus oedicnemus (Linnaeus, 1758)	Eurasian Stone-Curlew / Eurasian thicknee	Least concern	Winter visitor	Decreasing
	Caprimulgidae				
20	Caprimulgus affinis (Horsfield, 1821)	Savanna Nightjar	Least concern	Resident	Decreasing
21	Caprimulgus asiaticus (Latham, 1790)	Indian Nightjar	Least concern	Resident	Decreasing
	Cisticolidae				

22	Orthotomus sutorius (Pennant, 1769)	Common Tailorbird	Least concern	Resident	Decreasing
23	Prinia hodgsonii (Blyth, 1844)	Grey Breasted Prinia	Least concern	Resident	Decreasing
24	Prinia inornata (Sykes, 1832)	Plain Prinia/ White browed Wren-warbler	Least Concern	Resident	Stable
25	Prinia socialis (Sykes, 1832)	Ashy Prinia / Ashy wren-warbler	Least concern	Resident	Decreasing
	Columbidae				
26	Columba livia (Gmelin, 1789)	Rock Pigeon	Least concern	Resident	Stable
27	Streptopelia decaocto (Fridvaldszky, 1838)	Eurasian Collared- Dove	Least concern	Resident	Stable
28	Streptopelia senegalensis (Linnaeus, 1766)	Laughing Dove	Least concern	Resident	Stable
29	Streptopelia tranquebarica (Hermann, 1804)	Red Collared-Dove	Least concern	Resident	Stable
30	Treron phoenicoptera (Latham, 1790)	Yellow-Footed Green-Pigeon	Least concern	Winter visitor	Decreasing
	Coraciidae				
31	Coracias benghalensis (Linnaeus, 1758)	Indian Roller	Least concern	Resident	Stable
32	Coracias garrulous (Linnaeus, 1758)	European Roller	Least Concern	Passage Visitor	Decreases
	Corvidae				
33	Corvus macrorhynchos (Wagler, 1827)	Jungle Crow	Least concern	Resident	Decreasing
34	Corvus splendens (Vieillot, 1817)	House Crow	Least concern	Resident	Increasing
35	Dendrocitta vagabunda (Latham, 1790)	Rufous Treepie	Least concern	Resident	Stable
	Cuculidae				
36	Centropus sinensis (Stephens, 1815)	Greater Coucal	Least concern	Resident	Stable
37	Clamator jacobinus (Boddaert, 1783)	Jacobin cuckoo/ Pied cuckoo/ Pied crested cuckoo	Least Concern	Summer Visitor	Stable
38	Eudynamys scolopacea (Linnaeus, 1758)	Asian Koel	Least concern	Resident	Stable
39	Hierococcyx varius (Vahl, 1797)	Common hawk- cuckoo/ Brainfever Bird	Least concern	Resident	stable
40	Phaenicophaeus leschenaultia (Lesson, 1830)	Sirkeer Malkoha	Least concern	Resident	Stable
	Dicruridae				
41	Dicrurus caerulescens (Linnaeus, 1758)	White bellied drongo	Least Concern	Resident	Unknown
42	Dicrurus macrocercus (Vieillot, 1817)	Black Drongo	Least concern	Resident	Increasing
	Emberizidae				
43	Melophus lathamii (Gray, 1831)	Crested Bunting	Least concern	Resident	Stable
44	Emberiza bruniceps (Brandt, 1841)	Red headed bunting	Least Concern	Winter Visitor	Stable
	Estrildidae				

45	Lonchura malabarica (Linnaeus, 1758)	Indian Silver bill	Least concern	Resident	stable
	Falconidae				
46	Falco tinnunculus (Linnaeus, 1758)	Common Kestrel	Least Concern	Winter visitor	Decreasing
	Glareolidae				
47	Cursorius coromandelicus (Gmelin, 1789)	Indian Courser	Least concern	Resident	Decreasing
48	Glareola lactea (Temminck, 1820)	Little Pratincole/Small Indian Pratincole	Least Concern	Winter Visitor	unknown
	Halcyonidae				
49	Halcyon smyrnensis (Olitari, 1758)	white-throated kingfisher	Least Concern	Resident	Decreasing
	Hirudinidae				
50	Cecropis daurica (Laxmann, 1769)	Red Rumped swallow	This taxon has not yet been assessed for the IUCN Red List, but is in the Catalogue of Life	Resident	Unknown
51	Hirundo rustica (Linnaeus, 1758)	Barn Swallow	Least Concern	Resident	Decreasing
52	Hirundo smithii (Leach, 1818)	Wire-tailed Swallow	Least Concern	Resident	Increasing
53	Petrochelidon fluviicola (Blyth, 1855)	Streak-throated- swallow	This taxon has not yet been assessed for the IUCN Red List, but is in the Catalogue of Life	Resident	Unknown
54	Ptyonoprogne concolor (Sykes, 1832)	Dusky crag martin	This taxon has not yet been assessed for the IUCN Red List, but is in the Catalogue of Life	Resident	Unknown
	Laniidae				
55	Lanius meridionalis (Temminck, 1820)	Southern Grey Shrike	*This taxon has not yet been assessed for the IUCN Red List, but is in the Catalogue of Life	Resident	Stable
56	Lanius schach (Linnaeus, 1758)	Long tailed shrike /Rufous-backed Shrike	Least concern	Resident	Stable
57	Lanius vittatus (Valenciennes, 1826)	Bay-backed Shrike	Least concern	Resident	stable
	Leiotherichidae				
58	Turdoides caudatus (Dumont, 1823)	Common Babbler	Least concern	Resident	Stable
59	Turdoides malcolmi (Sykes, 1832)	Large Grey Babbler	Least concern	Resident	stable
60	Turdoides striatus (Dumont, 1823)	Jungle Babbler	Least concern	Resident	Stable
	Megalaimidae				
61	Megalaima haemacephala (Philipp Ludwig Statius)	Coppersmith Barbet	Least concern	Resident	Decreasing

	Müller,1776)				
	Meropidae				
62	Merops orientalis (Latham, 1801)	Green Bee-eater	Least concern	Resident	Increasing
63	Merops persicus (Pallas, 1773)	Blue-Cheeked Bee-Eater	Least concern	Summer Visitor	Decreasing
64	Merops philippinus (Linnaeus, 1766)	Blue Tailed-bee-eater	Least Concern	Resident	Stable
	Monarchidae				
65	Terpsiphone paradise (Linnaeus, 1758)	Indian Paradise flycatcher/ Asian Paradise flycatcher	Least Concern	Summer Visitor	Stable
	Motacillidae				
66	Anthus rufulus (Vieillot, 1818)	Paddyfield pipit/ Oriental pipit	Least Concern	Resident	Stable
67	Motacilla alba (Linnaeus, 1758)	White Wagtail	Least Concern	Resident	Stable
68	Motacilla cinerea (Tunstall, 1771)	Grey wagtail	Least concern	Resident	Stable
69	Motacilla Citreola (Pallas, 1776)	Citrine wagtail	Least concern	Resident	Stable
70	Motacilla flava (Linnaeus, 1758)	Yellow wagtail	Least concern	Resident	Decreasing
71	Motacilla maderaspatensis (Gmelin, 1789)	White-browed wagtail	This taxon has not yet been assessed for the IUCN Red List, but is in the Catalogue of Life	Resident	Unknown
	Muscicapidae				
72	Cercomela fusca (Blyth, 1851)	Brown rock Chat	Least concern	Resident	Stable
73	Copsychus saularis (Linnaeus, 1758)	Oriental Magpie-Robin	Least concern	Resident	Stable
74	Ficedula parva (Bechstein, 1792)	Red-breasted flycatcher	Least Concern	Winter Visitor	Stable
75	Luscinia svecica (Linnaeus, 1758)	Blue throat	Least concern	Winter visitor	Stable
76	Monticola solitarius (Linnaeus, 1758)	Blue Rock-Thrush	least concern	Winter visitor	Stable
77	Oenanthe deserti (Temminck, 1829)	Desert wheatear	Least Concern	Winter Visitor	Stable
78	Oenanthe picata (Blyth, 1847)	Variable Wheatear	Least concern	Winter visitor	Stable
79	Phoenicurus ochruros (S.G.Gmelin, 1774)	Black redstart	Least Concern	Winter Visitor	Increasing
80	Saxicola caprata (Linnaeus, 1766)	Pied Bushchat	Least concern	Winter visitor	Stable
81	Saxicola torquata (Linnaeus, 1766)	Common Stonechat	Least concern	Winter visitor	Stable
82	Saxicoloides fulicata (Linnaeus, 1776)	Indian Robin	Least concern	Resident	Stable
	Nectariniidae				
83	Nectarinia asiatica (Latham, 1790)	Purple Sunbird	Least concern	Resident	Stable
	Oriolidae				
84	Oriolus oriolus (Linnaeus, 1758)	Eurasian Golden Oriole	Least concern	Summer Visitor	Stable

	Passeridae				
85	Passer domesticus (Linnaeus, 1758)	House Sparrow	Least concern	Resident	Increasing
	Phasianidae				
86	Francolinus pondicerianus (Gmelin, 1789)	Grey Francolin	Least Concern	Resident	Stable
87	Pavo cristatus (Linnaeus, 1758)	Indian Peafowl	Least Concern	Resident	Decreasing
	Phylloscopidae				
88	Phylloscopus collybita (Vieillot, 1817)	Common Chiffchaff	Least concern	Winter visitor	Decreasing
	Picidae				
89	Chrysocolaptes festivus (Boddaert, 1783)	White-naped woodpecker	Least Concern	Residential	Stable
90	Dinopium benghalense (Linnaeus, 1758)	Black-rumped Woodpecker	Least concern	Resident	Stable
91	Jynx torquilla (Linnaeus, 1758)	Eurasian wryneck	Least Concern	Winter Visitor	Decreasing
92	Picooides nanus (Vigors, 1832)	Brown-capped Pygmy Woodpecker	Least concern	Resident	Stable
	Ploceidae				
93	Ploceus philippinus (Linnaeus, 1766)	Baya Weaver	Least concern	Resident	Stable
	Psittacidae				
94	Psittacula cyanocephala (Linnaeus, 1766)	Plum-headed Parakeet	Least concern	Winter visitor	Decreasing
95	Psittacula eupatria (Linnaeus, 1766)	Alexandrine Parakeet	Near threatened	Resident	Decreasing
96	Psittacula krameri (Scopoli, 1769)	Rose-ringed Parakeet	Least concern	Resident	Increasing
	Pteroclididae				
97	Pterocles indicus (Gmelin, 1789)	Painted sandgrouse	Least concern	Resident	Stable
98	Pterocles exustus (Temminck, 1825)	Chestnut-bellied sandgrouse	Least concern	Resident	Stable
	Pycnonotidae				
99	Pycnonotus cafer (Linnaeus, 1766)	Red-vented Bulbul	Least concern	Resident	Increasing
100	Pycnonotus leucotis (Gould, 1836)	White-eared bulbul	Least concern	Resident	Decreasing
	Strigidae				
101	Asio flammeus (Pontoppidan, 1763)	Short-eared Owl	Least concern	Winter visitor	Decreasing
102	Athene brama (Temminck, 1821)	Spotted Owlet	Least concern	Resident	Stable
103	Bubo bubo (Linnaeus, 1758)	Eurasian Eagle-Owl	Least concern	Resident	Decreasing
	Sturnidae				
104	Acridotheres ginginianus (Latham, 1790)	Bank Myna	Least concern	Resident	Increasing
105	Acridotheres tristis (Linnaeus, 1766)	Common Myna	Least concern	Resident	Increasing
106	Sturnus contra (Linnaeus, 1758)	Asian Pied Starling	Least concern	Resident	Stable
107	Sturnus pagodarum (Gmelin, 1789)	Brahminy Starling	Least concern	Resident	increasing
108	Sturnus roseus (Linnaeus, 1758)	Rosy Starling	Least concern	Winter visitor	Stable
109	Sturnus vulgaris	Common Starling	Least concern	Winter visitor	Decreasing

	(Linnaeus, 1758)				
	Sylviidae				
110	Sylvia althaea (Hume, 1878)	Hume's Whitethroat	Least Concern	Winter Visitor	Stable
111	Chrysomma sinense (Gmelin, 1789)	Yellow-eyed Babbler	Least concern	Resident	Stable
112	Sylvia curruca (Linnaeus, 1758)	Common Lesser Whitethroat	Least concern	Winter visitor	Stable
	Tephrodornithidae				
113	Tephrodornis pondicerianus, (Gmelin, 1789)	Common Woodshrike	Least concern	Resident	Stable
	Tytonidae				
114	Tyto alba (Scopoli, 1769)	Barn Owl	Least concern	Resident	Decreasing
	Upupidae				
115	Upupa epops (Linnaeus, 1758)	Common Hoopoe	Least concern	Winter visitor	Stable
	Zosteropidae				
116	Zosterops palpebrosus (Temminck, 1824)	Oriental White-eye	Least concern	Resident	Decreasing

The category of water birds included 60 species of birds belonging to different families. Out of which 05 species *Aythya nyroca*, *Mycteria leucocephala*, *Limosa limosa*, *Sterna aurantia* and *Threskiornis melanocephalus* are Near Threatened, 02 species *Aythya ferina* and *Pelecanus crispus* are Vulnerable, 50 are Least Concern and 03 species “taxon has not yet been assessed for the IUCN Red List, but it is in Catalogue of Life” (Table 3).

Table 3: IUCN status of avian species

S.No.	IUCN Status	Water birds	Terrestrial birds	Number of species
1	Endangered	-	02	02
2	Vulnerable	02	-	02
3	Near Threatened	05	01	06
4	Least Concern	50	108	158
5	Not Evaluated	03	05	08
Total		60	116	176

According to IUCN Status, 34 species were Winter Visitor and 01 Passage Visitor and 25 were Resident (Table 4). Population trend of 29 species decreased, 20 were Stable and 07 species increased in the study area (Table 5). Population trend of 04 species were Unknown.

Table 4: Migratory status of avian species

S. No.	Migratory status	Water birds	Terrestrial bird	Number of Speciec
1	Resident	25	86	111
2	Winter Visitor	34	25	059
3	Summer Visitor	-	04	04
4	Passage Visitor	01	01	02
Total		60	116	176

Table 5: Population trend of avian species

S. No.	Population trend	Water birds	Terrestrial bird	Number of Species
1	Increases	07	12	019
2	Stable	20	63	083
3	Decreases	29	34	063
4	Unknown	04	07	011
Total		60	116	176

In the category of terrestrial birds 116 species belonging to different families were observed in the study area. Out of which 02 species *Aquila nipalensis* and *Neophron percnopterus* are endangered and only one species *Psittacula eupatria* is near threatened. Five species were not yet been assessed for the IUCN Red List, but is in the Catalogue of Life. 108 species were least concern, 86 birds species are Resident. 25 species are Winter Visitor, 04 species *Clamator jacobinus*, *Merops persicus*, *Terpsiphone paradise* and *Oriolus oriolus* are Summer Visitor and only 01 species *Coracias garrulous* is Passage Visitor. Population trend of 34 species decreases, 63 are stable and 12 species increases where as 7 species were unknown. Major threats and reason for decline in population are mining, anthropogenic activities, population growth, resource consumption, climate change and global warming, urbanisation, invasive alien species, over-exploitation of natural resources and environmental degradation.

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