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STATUS AND DIVERSITY OF AVIFAUNA IN SULTANPUR NATIONAL PARK IN GURGAON DISTRICT-HARYANA, INDIA

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ABSTRACT

The present research work was carried out during September 2009 to March 2014 to investigate the avian biodiversity of Sultanpur National Park in Haryana, India. In all, 161 species of birds belonging to 16 orders and 47 families were observed from the Sultanpur National Park. Out of these 161 species of Birds, 99 species of birds were Resident, 41 species winter migratory, 11 species local migratory and 10 species of birds were summer migratory. The present study revealed that 155 species of birds were Least Concern, two species of birds like Saras Crane (*Grus antigone*) and White-necked Stork (*Ciconia episcopus*) were vulnerable and four species of birds like Black-necked Stork (*Ephippiorhynchus asiaticus*), Painted Stork (*Mycteria leucocephala*), Darter (*Anhinga melanogaster*) and Oriental White Ibis (*Threskiornis melanocephalus*) were near Threatened as per IUCN Red Data Book. The present studies tempt to suggest that Sultanpur National Park need to be further strengthened by ensuring water throughout the year in the accompaniment of massive implantation of *Ficus religiosa*, *Ficus bengalensis*, *Azadirachta indica*, *Acasia nilotica* and *Mangifera indica* trees to serve as the best roosting and breeding ground for Painted Stork, White-necked Stork, Black-necked Stork and platforms may be developed to encourage proliferation of Saras Crane and White-necked Stork.

Key words: Sultanpur National Park, Deteriorated Habitat, Habitat Rejuvenation, Eco-tourism.

Introduction

Sultanpur National Park is an artificial lake which was upgraded to National Park in the year 1989 from a small bird sanctuary. It is located in Gurgaon (now Gurugram) district near Farrukhnagar town on National highway No.8 and at a distance of 15 Kms from Gurgaon city. Earlier workers, who have worked on avian biodiversity of Sultanpur National Park and adjoining region of Haryana, include, Sharma, 1985; Gaston, 1994; Poole, 1994; Kalpavriksh, 1996; Harvey, 2003; Sundar, 2005; Urfi *et al*., 2005; Gupta *et al*., 2010, 2011a-c, 2012; Gupta and Kaushik, 2011, 2012a-d, 2013a-b, 2014; Chopra *et al*. (2012) and Kaushik and Gupta, 2013, 2014a-c.

The present paper attempts to document the avifauna of this lake and suggest some measures to better manage the lake for birds.

Material and Methods

Sultanpur National Park (28°27'50.08"N 76°53'28.63"E) is located near Farrukhnagar village in Gurgaon district in Haryana in the National capital region (Fig.1, Plate 1). Its surface area is 1.43 km^2. It is a popular birding location in the NCR for it is quite approachable.

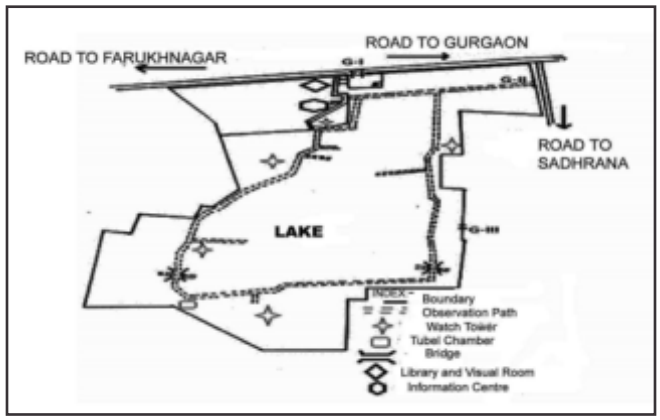

Fig. 1: Map of Sultanpur National Park in Gurgaon District in Haryana, India

The avifauna of Sultanpur was documented periodically between 2009-2014. Observations were recorded with the help of Zenith and Nikon Coolpix P500 cameras. The recorded birds from Sultanpur Bird Sanctuary were further grouped into "Resident"; "Winter Migratory"; "Local Migratory" and "Summer Migratory" categories following Kumar *et al.* (2005). Global conservation status was worked out according to the IUCN Red Data Book (Birdlife International, 2014). Bird guild

Sultanpur National Park is famous wintering ground for migratory birds, facing threats due to non-availability of water-sheet to float and feed. It is most favorable roosting and breeding ground for Painted Storks in National Capital Region.

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Fig. 1: Water sheet of SNP

Fig. 2: Wetland of SNP

Fig. 3: Painted storks at SNP

Fig. 4: Sultanpur National Park : A View

Fig. 5: Asian openbill stork

Fig. 6: A pair of oriental white Ibis

Fig. 7: Greylag geese

Fig. 8: Painted storks at SNP

Plate 1: Assorted pictorial depiction of Avian diversity at Sultanpur National Park (SNP), Gurgaon, Haryana, India.

Table 1: Checklist of avifauna of Sultanpur National Park in Gurgaon district in Haryana

S. No.	Order	Family	Scientific name	Common name	Res. status	IUCN status	Feeding habits
1	Podicipediformes	Podicipedidae	*Tachybaptus ruficollis* (Pallas, 1764)	Little Grebe	R	LC	Carnivorous
2	Pelecaniformes	Phalacrocoracidae	*Phalacrocorax niger* (Vieillot, 1817)	Little Cormorant	R	LC	Carnivorous
3			*Phalacrocorax fuscicollis* Stephens, 1826	Indian Shag	LM	LC	Carnivorous
4			*Phalacrocorax carbo* (Linnaeus, 1758)	Great Cormorant	LM	LC	Carnivorous
5		Anhingidae	*Anhinga melanogaster* Pennant, 1769	Darter	R	NT	Carnivorous
6	Ciconiiformes	Ardeidae	*Egretta garzetta* (Linnaeus, 1766)	Little Egret	R	LC	Carnivorous
7			*Ardea cinerea* Linnaeus, 1758	Grey Heron	LM	LC	Carnivorous
8			*Ardea purpurea* Linnaeus, 1766	Purple Heron	LM	LC	Carnivorous
9			*Casmerodius albus* (Linnaeus 1758)	Large Egret	R	LC	Carnivorous
10			*Mesophoyx intermedia* (Wagler 1829)	Median Egret	R	LC	Carnivorous
11			*Bubulcus ibis* (Linnaeus, 1758)	Cattle Egret	R	LC	Carnivorous
12			*Ardeola grayii* (Sykes, 1832)	Indian Pond-Heron	R	LC	Carnivorous
13			*Nycticorax nycticorax* (Linnaeus, 1758)	Black-crowned Night Heron	SM	LC	Carnivorous
14		Ciconiidae	*Mycteria leucocephala* (Pennant, 1769)	Painted Stork	R	NT	Carnivorous/Piscivorous
15			*Ephippiorhynchus asiaticus* (Latham, 1790)	Black-necked Stork	R	NT	Carnivorous/Piscivorous
16			*Ciconia episcopus* (Boddaert, 1783)	White-necked Stork	LM	VU	Carnivorous/Piscivorous
17			*Anastomus oscitans* (Boddaert, 1783)	Asian Open Bill Stork	LM	LC	Carnivorous/Piscivorous
18		Threskiornithidae	*Threskiornis melanocephalus* (Latham, 1790)	Oriental White Ibis	R	NT	Omnivorous
19			Platalea leucorodia Linnaeus, 1758	Eurasian Spoonbill	WM	LC	Omnivorous
20	Anseriformes	Anatidae	*Anser indicus* (Latham, 1790)	Bar-headed Goose	WM	LC	Omnivorous
21			*Anser anser* (Linnaeus, 1758)	Greylag Goose	WM	LC	Omnivorous
22			*Dendrocygna javanica* (Horsfield, 1821	Lesser-whistling Duck	SM	LC	Omnivorous
23			*Anas platyrhynchos* Linnaeus, 1758	Mallard	WM	LC	Omnivorous
24			*Tadorna ferruginea* (Pallas 1764)	Brahminy Shelduck	WM	LC	Omnivorous
25			*Sarkidiornis melanotos* (Pennant, 1769)	Comb Duck	SM	LC	Omnivorous
26			*Anas strepera* (Linnaeus, 1758)	Gadwall	WM	LC	Omnivorous
27			*Anas penelope* Linnaeus, 1758	Eurasian Wigeon	WM	LC	Omnivorous
28			*Anas poecilorhyncha* J.R. Forester, 1781	Spot-billed Duck	R	LC	Omnivorous
29			*Anas clypeata* Linnaeus, 1758	Northern Shoveller	WM	LC	Omnivorous
30			*Anas acuta* Linnaeus, 1758	Northern Pintail	WM	LC	Omnivorous
31			*Anas querquedula* Linnaeus, 1758	Garganey	WM	LC	Omnivorous
32			*Anas crecca* Linnaeus, 1758	Common Teal	WM	LC	Omnivorous
33			*Aythya ferina* (Linnaeus, 1758)	Common Pochard	WM	LC	Omnivorous
34			*Aythya fuligula* (Linnaeus, 1758)	Tufted Pochard	WM	LC	Omnivorous
35	Falconiformes	Accipitridae	*Haliastur indus* (Boddaert,1783)	Brahminy Kite	R	LC	Carnivorous/Piscivorous
36			*Elanus caeruleus* (Desfontaines, 1789)	Black-shouldered Kite	R	LC	Carnivorous
37			*Milvus migrans* (Boddaert,1783)	Black Kite	R	LC	Omnivorous
38			*Accipiter badius* (Gmelin, 1788)	Shikra	R	LC	Carnivorous
39			*Aquila rapax* (Temminck,1824)	Tawny Eagle	LM	LC	Carnivorous
40			*Circus melanoleucos* (Pennant, 1769)	Pied Harrier	R	LC	Carnivorous
41			*Accipiter nisus* (Linnaeus, 1758)	Eurasian Sparrow Hawk	LM	LC	Carnivorous

S. No.	Order	Family	Scientific name	Common name	Res. status	IUCN status	Feeding habits
42	Galliformes	Phasianidae	*Francolinus francolinus* (Linnaeus,1766)	Black Francolin	R	LC	Omnivorous
43			*Francolinus pondicerianus* (Gmelin,1789)	Grey Francolin	R	LC	Omnivorous
44			*Coturnix coturnix* (Linnaeus,1758)	Common Quail	R	LC	Omnivorous
45			*Pavo cristatus* Linnaeus,1758	Indian Peafowl	R	LC	Omnivorous
46	Gruiformes	Gruidae	*Grus antigone* (Linnaeus, 1758)	Saras Crane	R	VU	Omnivorous/Piscivorous
47		Rallidae	*Zapornia fusca* (Linnaeus,1766)	Ruddy Breasted Crake	R	LC	Omnivorous
48			*Amaurornis phoenicurus* (Pennant, 1769)	White-breasted Waterhen	R	LC	Omnivorous
49			*Porphyrio porphyrio* (Linnaeus, 1758)	Purple Moorhen	R	LC	Omnivorous
50			*Gallinula chloropus* (Linnaeus, 1758)	Common Moorhen	R	LC	Omnivorous
51			*Fulica atra* Linnaeus, 1758	Common Coot	WM	LC	Omnivorous
52	Charadriiformes	Charadriidae	*Charadrius dubius* Scopoli,1786	Little Ringed Plover	WM	LC	Insectivorous/Omnivorous
53			*Charadrius alexandrines* Linnaeus, 1758	Kentish Plover	WM	LC	Omnivorous
54			*Vanellus indicus* (Boddaert, 1783)	Red-wattled Lapwing	R	LC	Omnivorous
55			*Vanellus leucurus* (Lichtenstein, 1823)	White-tailed Lapwing	WM	LC	Omnivorous
56		Scolopacidae	*Tringa erythropus* (Pallas, 1764)	Spotted Redshank	WM	LC	Insectivorous/Omnivorous
57			*Tringa totanus* (Linnaeu s, 1758)	Common Redshank	WM	LC	Insectivorous/Omnivorous
58			*Actitis hypoleucos* Linnaeus, 1758	Common Sandpiper	WM	LC	Insectivorous/Omnivorous
59			*Gallinago gallinago* (Linnaeus, 1758)	Common Snipe	WM	LC	Insectivorous/Omnivorous
60			*Tringa nebularia* (Gunner,1767)	Common Greenshank	WM	LC	Insectivorous/Omnivorous
61			*Philomachus pugnax* (Linnaeus, 1758)	Ruff	WM	LC	Insectivorous/Omnivorous
62			*Tringa stagnatilis* (Bechstein,1803)	Marsh Sandpiper	WM	LC	Insectivorous/Omnivorous
63			*Tringa glareola* Linnaeus,1758	Wood Sandpiper	WM	LC	Insectivorous/Omnivorous
64		Recurvirostridae	*Himantopus himantopus* (Linnaeus, 1758)	Black-winged Stilt	R	LC	Insectivorous/Omnivorous
65			*Recurivirostra avosetta* Linnaeus, 1758	Pied Avocet	WM	LC	Insectivorous/Omnivorous
66		Jacanidae	*Hydrophasianus chirurgus* (Scopoli, 1786)	Pheasant tailed Jacana	SM	LC	Omnivorous
67	Apodiformes	Apodidae	*Apus affinis* (J.E.Gray,1830)	House Swift	R	LC	Insectivorous
68	Columbiformes	Columbidae	*Columba livia* Gmelin,1789	Blue Rock Pigeon	R	LC	Granivorous
69			*Streptopelia orientalis* (Latham,1790)	Oriental Turtle Dove	LM	LC	Granivorous
70			*Streptopelia decaocto* (Frivaldszky,1838)	Eurasian Collared Dove	R	LC	Granivorous
71			Streptopelia tranquebarica (Hermann,1804)	Red Collared Dove	R	LC	Granivorous
72			*Spilopelia chinensis* (Scopoli,1786)	Eastern Spotted Dove	R	LC	Granivorous
73			*Spilopelia senegalensis* (Linnaeus,1766)	Laughing Dove	R	LC	Granivorous
74			*Treron phoenicoptera* (Latham, 1790)	Yellow footed Green Pigeon	LM	LC	Frugivorous
75	Psittaciformes	Psittacidae	*Psittacula krameri* (Scopoli,1769)	Rose-ringed Parakeet	R	LC	Frugivorous
76	Cuculiformes	Cuculidae	*Eudynamys scolopacea* (Linnaeus,1758)	Asian Koel	SM	LC	Omnivorous
77			*Centropus sinensis* (Stephens,1815)	Greater Coucal	R	LC	Omnivorous
78			*Clamator jacobinus* (Boddaert, 1783)	Pied Cuckoo	SM	LC	Omnivorous
79			*Hierococcyx varius* Vahl, 1797	Common Hawk Cuckoo	SM	LC	Omnivorous
80	Strigiformes	Tytonidae	*Tyto alba* (Scopoli,1769)	Barn Owl	R	LC	Carnivorous
81		Strigidae	*Athene brama* (Temminck, 1821)	Spotted owlet	R	LC	Carnivorous
82			*Bubo bubo* (Linnaeus,1758)	Eurasian Eagle Owl	R	LC	Carnivorous
83	Coraciformes	Alcedinidae	*Ceryle rudis* (Linnaeus, 1758)	Lesser Pied Kingfisher	R	LC	Carnivorous
84			*Halcyon smyenensis* (Linnaeus,1758)	White-breasted Kingfisher	R	LC	Carnivorous

S. No.	Order	Family	Scientific name	Common name	Res. status	IUCN status	Feeding habits
85			*Alcedo atthis* (Linnaeus,1758)	Small Blue Kingfisher	R	LC	Carnivorous
86		Meropidae	*Merops persicus* Pallas, 1773	Blue-cheeked Bee-eater	SM	LC	Insectivorous
87			*Merops philippinus* Linnaeus, 1766	Blue-tailed Bee-eater	SM	LC	Insectivorous
88			*Merops orientalis* Latham,1801	Green Bee-eater	R	LC	Insectivorous
89		Coraciidae	*Coracias benghalensis* (Linnaeus,1758)	Indian Roller	R	LC	Insectivorous/Carnivorous
90		Upupidae	*Upupa epops* Linnaeus,1758	Common Hoopoe	R	LC	Insectivorous/Omnivorous
91		Bucerotidae	*Ocyceros birostris* (Scopoli,1786)	Indian Grey Hornbill	R	LC	Omnivorous
92	Piciformes	Capitonidae	*Psilopogon zeylanicus* (Gmelin,1788)	Brown-headed Barbet	R	LC	Frugivorous
93		Picidae	*Psilopogon haemacephalus* (Muller,1776)	Coppersmith Barbet	R	LC	Frugivorous
94			*Dinopium benghalense* (Linnaeus,1758)	Black-rumped Flameback	R	LC	Insectivorous
95			*Leiopicus mahrattensis* (Latham,1801)	Yellow-crowned Woodpecker	R	LC	Insectivorous
96	Passeriformes	Hirundinidae	*Hirundo smithii* Leach,1818	Wire-tailed Swallow	R	LC	Insectivorous
97			*Hirundo rustica* Linnaeus, 1758	Barn Swallow	R	LC	Insectivorous
98			*Hirundo rupestris* Scopoli,1769	Eurasian Crag Martin	LM	LC	Insectivorous
99			*Hirundo concolor* Sykes,1833	Dusky Crag Martin	R	LC	Insectivorous
100			*Hirundo daurica* (Linnaeus,1771)	Red-rumped Swallow	WM	LC	Insectivorous
101			*Delichon urbicum* (Linnaeus,1758)	Northern House Martin	R	LC	Insectivorous
102		Laniidae	*Lanius excubitor* Linnaeus,1758	Great Grey Shrike	R	LC	Carnivorous
103			*Lanius vittatus* Valenciennes,1826	Bay-backed Shrike	R	LC	Carnivorous
104			*Lanius schach* Linnaeus,1758	Long Tailed Shrike	R	LC	Carnivorous
105			*Lanius cristatus* Linnaeus,1758	Brown Shrike	WM	LC	Insectivorous
106		Oriolidae	*Oriolus oriolus* (Linnaeus, 1758)	Eurasian Golden Oriole	SM	LC	Omnivorous
107		Dicruridae	*Dicrurus macrocercus* Vieillot,1817	Black Drongo	R	LC	Insectivorous
108		Pittidae	*Pitta brachyura* (Linnaeus,1766)	Indian Pitta	R	LC	Insectivorous
109		Alaudidae	*Mirafra erythroptera* Blyth,1845	Indian Lark	R	LC	Omnivorous
110			*Eremopterix nigriceps* (Gould,1839)	Black-crowned Sparrow Lark	R	LC	Omnivorous
111			*Ammomanes phoenicurus* (Franklin,1831)	Rufous-tailed Finch Lark	R	LC	Omnivorous
112			*Calandrella raytal* (Blyth,1845)	Sand Lark	R	LC	Omnivorous
113			*Galerida cristata* (Linnaeus,1758)	Common Crested Lark	R	LC	Omnivorous
114			*Alauda gulgula* Franklin,1831	Oriental Skylark	R	LC	Omnivorous
115		Sturnidae	*Sturnus pagodarum* (Gmelin,1789)	Brahminy Starling	R	LC	Omnivorous
116			*Sturnus roseus* (Linnaeus,1758)	Rosy Starling	WM	LC	Omnivorous
117			*Sturnus vulgaris* Linnaeus,1758	Common Starling	WM	LC	Omnivorous
118			*Sturnus contra* Linnaeus,1758	Asian Pied Starling	R	LC	Omnivorous
119			*Acridotheres tristis* (Linnaeus,1766)	Common Myna	R	LC	Omnivorous
120			*Acridotheres ginginianus* (Latham,1790)	Bank Myna	R	LC	Omnivorous
121		Corvidae	*Dendrocitta vagabunda* (Latham,1790)	Rufous Treepie	R	LC	Frugivorous
122			*Corvus splendens* Vieillot,1817	House Crow	R	LC	Omnivorous
123			*Corvus macrorhynchos* Wagler,1827	Large Billied Crow	R	LC	Omnivorous
124		Campepiigidae	*Pericrocotus cinnamomeus* (Linnaeus,1766)	Small Minivet	R	LC	Insectivorous
125		Pycnonotidae	*Pycnonotus cafer* (Linnaeus,1766)	Red-vented Bulbul	R	LC	Frugivorous
126		Sylviidae	*Chrysomma sinense* (Gmelin,1789)	Yellow-eyed Babbler	R	LC	Omnivorous
127			*Acrocephalus stentoreus* (Ehrenberg,1833)	Clamorous Reed-warbler	WM	LC	Omnivorous

S. No.	Order	Family	Scientific name	Common name	Res. status	IUCN status	Feeding habits
128		Timaliidae	*Turdoides caudatus* (Dumont,1823)	Common Babbler	R	LC	Omnivorous
129			*Turdoides earlei* (Blyth,1844)	Striated Babbler	R	LC	Omnivorous
130			*Turdoides malcolmi* (Sykes,1832)	Large Grey Babbler	R	LC	Omnivorous
131			*Turdoides striatus* (Dumont,1823)	Jungle Babbler	R	LC	Omnivorous
132		Muscicapidae	*Muscicapa dauurica* Pallas,1811	Asian Brown Flycatcher	WM	LC	Insectivorous
133			*Luscinia svecica* (Linnaeus,1758)	Blue throat	WM	LC	Insectivorous
134			*Copsychus saularis* (Linnaeus,1758)	Oriental Magpie Robin	R	LC	Insectivorous
135			*Cercomela fusca* (Blyth,1851)	Brown Rock Chat	R	LC	Insectivorous
136			*Saxicola torquatus* ((Linnaeus,1766))	Common Stone Chat	R	LC	Insectivorous
137			*Saxicola caprata* (Linnaeus,1766)	Pied Bush Chat	WM	LC	Insectivorous
138			*Saxicoloides fulicatus* (Linnaeus,1776)	Indian Robin	R	LC	Insectivorous
139			*Monticola solitarius* (Linnaeus,1758)	Blue Rock Thrush	R	LC	Omnivorous
140		Cisticolidae	*Cisticola juncidis* (Rafinesque,1810)	Zitting cisticola	R	LC	Omnivorous
141			*Prinia buchanani* Blyth,1844	Rufous Fronted Prinia	R	LC	Insectivorous/Nectivorous
142			*Prinia socialis* Sykes,1832	Ashy Prinia	R	LC	Insectivorous/Nectivorous
143			*Prinia sylvatica* Jerdon,1840	Jungle Prinia	R	LC	Insectivorous/Nectivorous
144			*Prinia flaviventris* (Delessert,1840)	Yellow Bellied Prinia	R	LC	Insectivorous/Nectivorous
145			*Orthotomous sutorius* (Pennant,1769)	Common Tailor Bird	R	LC	Insectivorous/Nectivorous
146		Paridae	Parus major (Linnaeus,1758)	Great Tit	R	LC	Omnivorous
146		Motacillidae	*Anthus trivialis* (Linnaeus,1758)	Indian Tree Pipit	R	LC	Insectivorous
148			*Anthus rufulus* Vieillot,1818	Paddy-field Pipit	R	LC	Insectivorous
149			*Anthus similes* Jerdon,1840	Brown Rock Pipit	WM	LC	Insectivorous
150			*Dendronanithus* indicus (Gmelin,1789)	Forest Wagtail	WM	LC	Insectivorous
151			*Motacilla alba* Linnaeus, 1758	White Wagtail	WM	LC	Insectivorous
152			*Motacilla maderaspatensis* Gmelin, 1789	Large Pied Wagtail	WM	LC	Insectivorous
153			*Motacilla citreola* Pallas, 1776	Citrine Wagtail	WM	LC	Insectivorous
154			*Motacilla flave* Linnaeus, 1758	Yellow Wagtail	WM	LC	Insectivorous
155			*Motacilla cinerea* Tunstall,1771	Grey Wagtail	WM	LC	Insectivorous
156		Nectariniidae	*Nectarinia asiatica* (Latham,1790)	Purple Sunbird	R	LC	Nectivorous
157		Passeridae	*Passer domesticus* (Linnaeus, 1758)	House Sparrow	R	LC	Omnivorous/Granivorous
158			*Ploeus philippinus* (Linnaeus,1766)	Baya Weaver	R	LC	Omnivorous
159		Estrildidae	*Amandava amandava* (Linnaeus,1758)	Red Avadavat	R	LC	Omnivorous
160			*Lonchura malabarica* (Linnaeus,1758)	Indian Silverbill	R	LC	Omnivorous/Insectivorous
161			*Lonchura punctulata* (Linnaeus,1758)	Spotted Munia	R	LC	Omnivorous

Abbreviations:-R-Resident; WM-Winter Migratory; LM-Local Migratory; SM-Summer Migratory, R-Resident

classification followed Ali and Ripley (1987). Birds were identified using Ali and Ripley (1987); Ali (1996) and Grimmet *et al.*, (1998). The nomenclature follows Manakadan and Pittie (2001). The relative diversity (RDi) of bird families present was deduced by using the following formula (Torre-Cuadros *et al*., 2007):

$$RDi = \frac{\text{Number of bird species in a family X 100}}{\text{Total number of species}}$$

Results and Discussion

The present study reveals that in all 161 species of birds belonging to 16 orders and 47 families were observed from the Sultanpur National Park in Gurgaon district in Haryana (Table 1). Out of these 161 species of birds, 99 species were Resident, 41 species Winter Migratory, 11 species are Local migratory and 10 species were summer migratory. The values of Relative Diversity of various bird families are computed in Table 2. It is evident from the table 2, that family Anatidae has the highest values (RDi=9.31%) followed by Motacillidae (RDi=5.59%) and Ardeidae, Scolopacidae and Muscicapidae (RDi=4.96% each). The implication is that birds belonging to Anatidae like Gadwall (*Anas strepera*), Eurasian wigeon (*Anas penelope*), Northern Shoveller (*Anas clypeata*), Northern Pintail (*Anas acuta*), Garganey (*Anas querquedula*), Common Teal (*Anas crecca*), Comon Pochard (*Aythya ferina*), Mallard, and such like are most frequently encountered even though for a limited period i.e. winter. The least dominant families are Podicipedidae, Psittacidae, Tytonidae, Coraciidae, Upupidae, Bucerotidae, Dicruridae, Pittidae, Pycnonotidae and Paridae (RDi= 0.62% each).

Chopra *et al.* (2012) observed 113 species of birds belonging to 14 orders and 35 families from Sultanpur National Park between February 2011 to January 2012 including the Pacific Reef Egret (*Egretta sarca*), Cotton Pigmy Goose *(Nettapus coramandelianus*), Chestnut Headed Bee-Eater (*Merops leschenaulti*) and Hodgson Bushchat (*Saxicola insignis*) from Sultanpur National Park which were not observed in the present studies.

In so far as, feeding guilds are concerned, most were Omnivorous (66 spp.) followed by Insectivorous (50 spp.), Carnivorous (32 Spp.), Granivorous (6 spp.), Frugivorous (6 spp.) and Nectivorous (1 Spp.).

Of the 161 species of birds observed from the study area, two species - Saras Crane (*Grus antigone*) and Asian woolly-neck Stork (*Ciconia episcopus*) are Vulnerable, four species - Black-necked Stork (*Ephippiorhynchus asiaticus*), Painted Stork (*Mycteria leucocephala*), Darter (*Anhinga melanogaster*) and Oriental White Ibis *Threskiornis melanocephalus* are Near Threatened and 155 species of birds are categorized as least concern as per IUCN Red Data book (Birdlife International, 2014, IUCN Red Data Book, 2014, Plate 2). Saras Crane and Black-necked Stork were observed only twice during the study period i.e. from 2009 to 2013. In Sultanpur, mudflats are few and far between and hence the area does not support species like Redshank and White-tailed Lapwing. Species like the

Table 2: Relative diversity (RDi) of various avian families observed at Sultanpur National Park in Haryana, India

S.No.	Family	RDI
1	Podicipedidae	0.62
2	Phalacrocoracidae	1.86
3	Anhindidae	0.62
4	Ardeidae	4.96
5	Ciconiidae	2.48
6	Threskiornithidae	1.24
7	Anatidae	9.31
8	Accipitridae	4.34
9	Phasianidae	2.48
10	Gruidae	0.62
11	Rallidae	3.10
12	Charadriidae	2.48
13	Scolopacidae	4.96
14	Recurvirostridae	1.24
15	Jacanidae	0.62
16	Apodidae	0.62
17	Columbidae	4.34
18	Psittacidae	0.62
19	Cuculidae	2.48
20	Tytonidae	0.62
21	Strigidae	1.24
22	Alcedinidae	1.86
23	Meropidae	1.86
24	Coraciidae	0.62
25	Upupidae	0.62
26	Bucerotidae	0.62
27	Capitonidae	1.24
28	Picidae	1.24
29	Hirundinidae	3.72
30	Laniidae	2.48
31	Oriolidae	0.62
32	Dicruridae	0.62
33	Pittidae	0.62
34	Alaudidae	3.72
35	Sturnidae	3.72
36	Corvidae	1.86
37	Campepiigidae	0.62
38	Pycnonotidae	0.62
39	Muscicapidae	4.96
40	Paridae	0.62
41	Motacillidae	5.59
42	Nectariniidae	0.62
43	Passeridae	1.24
44	Timaliidae	2.48
45	Sylviidae	1.24
46	Cisticolidae	3.72
47	Estrildidae	1.86

Fig. 1: Eurasian spoonbills

Fig. 2: Black-necked stork

Fig. 3: Darter

Fig. 4:White-necked stork

Fig. 5: White-necked stork in the field

Fig. 6: Oriental white Ibis

Fig. 7: Saras crane

Fig. 8: Northern pintails

Plate 2: Assorted pictorial depiction of avian diversity at Sultanpur National Park (SNP), Gurgaon, Haryana, India.

Pheasant-tailed Jacana *Hydrophasianus chirurgus* and Bronze-winged Jacana *Metopidius indicus* prefer water lily and lotus and lack of those are largely lacking in the lake.

The need of the hour is thus for the management to identify its objectives, its target species and work towards maximizing these by appropriate habitat and water management.

Conclusion

Sultanpur has the potential to be amongst good bird conservation areas but would need some good planning and management inputs. Foremost, is a sustained water supply to regulate as per needs Secondly, afforestation with varied varieties and species of trees likes Peepal, Banyan, Neem, Kikar and Mango. In addition bushes, herbs, scrubs, Beri and Mango trees be planted in hundreds each. Thirdly appropriate emergent and submergent vegetation be sustained in water sheet as floating, rooted and sub-merged aquatic plants. In addition, several land flats be reconstructed in the centre and other places for water birds to roost and use. Watch towers and avenues for excursion be constructed on peripheral margins. These steps would generate good bio diversity in general and avian biodiversity in particular. Good bird life inside Sultanpur could also mean better livelihood to people especially youths living around the park by engaging them as guides. The present studies also provide an interesting feature related to the presence of just one pair each of Saras Crane and Black necked Stork, and both these are vulnerable spp. Their extra care is recommended to locally increase their numbers. Further, the presence of Asian woolley necks in the premises of Sultanpur Bird Sanctuary alongside Painted Storks, Black-necked Stork, Openbill Storks, therefore, this Bird Sanctuary may be promoted as the most favourable habitat for Storks in National Capital region in and around Delhi.

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गुडगांव जिला, हरियाणा, भारत में सुल्तानपुर राष्ट्रीय पार्क में पक्षी प्राणिजात की विविधता एवं स्तर

तिरशेम कुमार कौशिक एवं रोहताश चन्द गुप्ता

सारांश

हरियाणा, भारत में सुल्तानपुर राष्ट्रीय पार्क की पक्षी जैव विविधता की जांच करने के लिए सितम्बर, 2009 से मार्च, 2014 के दौरान वर्तमान शोध कार्य किया गया। कुल मिलाकर सुल्तानपुर राष्ट्रीय पार्क से 16 गणों और 47 कुलों से संबंधित पक्षियों की 161 प्रजातियों को प्रेक्षित किया गया। पक्षियों की 161 प्रजातियों में से पक्षियों की 99 प्रजातियां स्थानिक थी, 41 प्रजातियां सर्दी की प्रवासी, 11 प्रजातियां स्थानीय प्रवासी और पक्षियों की 10 प्रजातियां गरमी की प्रवासी थी। वर्तमान अध्ययन ने दर्शाया कि आइ यू सी एन रेड डाटा बुक के अनुसार पक्षियों की 155 प्रजातियां न्यूनतम चिन्ता की थी, सारस क्रेन (*ग्रूस एन्टिगोन*) और व्हाइट–नैक्ड स्टोर्क (*सिकोनिया इपिस्कोपस*) जैसी पक्षियों की दो प्रजातियां अतिसंवेदनशील थी तथा ब्लैक–नैक्ड स्टोर्क (*इफिपिओरहींकस एसिएटिकस*), पेन्टेड स्टोर्क (*माइक्टीरिया ल्यूकोसीफाला*), डार्टर (*एनहिंगा मीलेनोगेस्टर*) और ओरियन्टल व्हाइट इबिस (*थ्रीस्किओर्निस मीलेनोगेस्टर*) जैसी पक्षियों की चार प्रजातियां लगभग संकटस्थ थी। वर्तमान अध्ययनों में यह सुझाव देने का प्रयास किया गया है कि *फाइकस रीलिजिओसा, फाइकस बेंगालेन्सिस, ऐजैडिरैक्टा इंडिका, ऐकेशिया निलोटिका* और *मैंगिफेरा इंडिका* वृक्षों का बड़े पैमाने पर रोपण करने के साथ सालभर पानी सुनिश्चित करके सुल्तानपुर राष्ट्रीय पार्क को अधिक सशक्त बनाए जाने की आवश्यकता है ताकि यह पेन्टेड स्टोर्क, व्हाइट–नैक्ड स्टोर्क, ब्लैक–नैक्ड स्टोर्क के लिए सर्वोत्तम विश्राम स्थल और प्रजनन धरातल के रूप में काम कर सके तथा सारस क्रेन और व्हाइट–नैक्ड स्टोर्क के संवर्धन को प्रोत्साहित करने के लिए प्लेटफार्म विकसित किए जाने चाहिए।

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