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Diversity, Status and Abundance of Avian fauna in and around Jalna Urban, M.S., India

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Abstract- The present study conducted to investigate the diversity, distribution, status and abundance of Avian fauna in and around Jalna urban. We surveyed Wetland (Lakes, Ponds), Kundlika river, Forest, Grassland and Agriculture areas from June 2018 to December 2019. The result of present study reveals total 97 species of birds belonged to 48 families. Highest number 68 of bird species observed from agricultural areas, 57 species from forest areas, 41 species from Kundalika River and 32 species from wetlands. According to Status of birds 72 (74.22%) birds' species were residential, 9 (9.27%) were winter migrant, some 12 (12.37%) local migrant and 4 (4.12%) found passage migrants. Considering abundance, 43 (44.32%) birds' species were commonly seen, 18 (18.55%) species were very common, 27 (27.83%) species were not rare but not common whereas 9 (9.27%) species were rare. Winter migrant species were Greater flamingoes, Eurassian spoonbills, Painted stork, Bar headed goose, Barn swallow, Common sandpiper, Ruddy shelduck. Rare species of bird in Jalna were Common hoopoe, spotted owlet, Wooly necked stork and Yellow fronted woodpecker, Indian Grey hornbill. For conservation point of view there is need of time to protect forest areas and wetlands through proper administration and legislation. Beside plantation of bird attracting plants and development of new habitat may lead to increase in the species richness in the district.

Keyword**:** Avian fauna, Jalna urban, Bird Species, Survey, Status, Abundance

I. INTRODUCTION

Jalna district is ecologically important which is situated in the center part of Maharashtra state in India and in northern direction of Marathwada region. Jalna district is located between $19^0$1 north to 21^o3 North Latitudes and 75 ^{o}4 East to 76 ^{o}4 East Longitude with 534 meters average altitude above sea level. The district has a sub-Tropical climatic condition; the rainfall is received from the southwest monsoon during the month of June to September. The average annual rainfall of the Jalna district ranges between 650 to 750 mm. Jalna often experiences three distinct seasons. The rainy season starts from June to October which followed by winter and last up to February. The winter season is followed by hot summer, and it continues up to June.

The district comes in Deccan plateau having moderately to gently sloping undulated topography with 6.5 thousand-hectare (0.84 percent) forest area. It is occupied by Ajanta and Satmala hill ranges in Northern parts. The river Godavari flows from West to East direction along the Southern boundary. The rivers Dudhana Purna, Gulati is the main tributaries of the river Godavari, which flow through the Jalna district. The Jalna city is situated on the banks of Kundalika River. Jalna district blessed with good flora and fauna having wildlife biodiversity, including mammals, birds, insect, etc.

Birds community are the important component of the ecosystem and it indicates the healthiness of the ecosystem. Birds are ecologically versatile and live in all types of habitats. They play an important role in the ecosystem as potential pollinators, scavengers and a good indicator [1]. Birds feed on different types of insect and pest and control its level naturally; they help in the dispersal of plant seed. But now day's continuous deforestation, extensive agriculture, pollution and human interference reduced natural habitats of birds and thus some species of birds become declining. Its need of time to conserve them otherwise some species will completely diminish.

II. RELATED WORKS

Many researchers worked on diversity, distribution, status and abundance of birds all over India that includes checklist of 453 bird species [2], 127 avian species belonging to 38 families from Dindori District [3], 140 species from the TERI campus of Madhya Pradesh [4]. About 113 species from the Siltanpur National park Gorgaonm Haryana [5], 109 species from Guvahati University Campus, Assam [6], 304 species from Pond Dam Wetland in Himachal Pradesh [7], 99 species from Vansada National Park Gujarat [8], 93 species from Campus of University of Jammu [9].

In Maharashtra also several research works reported on the Avian fauna in which 540 bird species reported from

Maharashtra [10], about 450 bird species listed from western Maharashtra [11], 64 species from Salim Ali lake Aurangabad [12, 13], 151 species from Nanded city [13]. Total 165 species from Osmanabad district [14], 53 species from Parbhani district [15, 17], 55 species from the Ghotnimbala lake of Chandrapur district [16], 50 species in Aundha Nagnath of Higoli district [18] and 84 species Majalgaon of Beed District [19]. However, no proper data are available on the diversity, distribution, status and abundance of avian fauna of Jalna district. By keeping this mind, we conducted this survey to investigate the same. This study would be baseline information for future studies.

III. METHODOLOGY

Study Area:

We selected study areas in and around Jalna urban in district in Maharashtra state. Jalna city is located at 19.8410°N 75.8864°E. It has an average elevation of 508 m (1,667 ft), on the banks of the Kundalika River. For survey our covered area of 20x20 km^2 in and around Jalna city, including Wetlands (Motilake, Ghanewadi Lake, Revgaon Lake, Kundalika River), forest area (Kankaneshwar) and Agriculture areas ((Fig. 1).

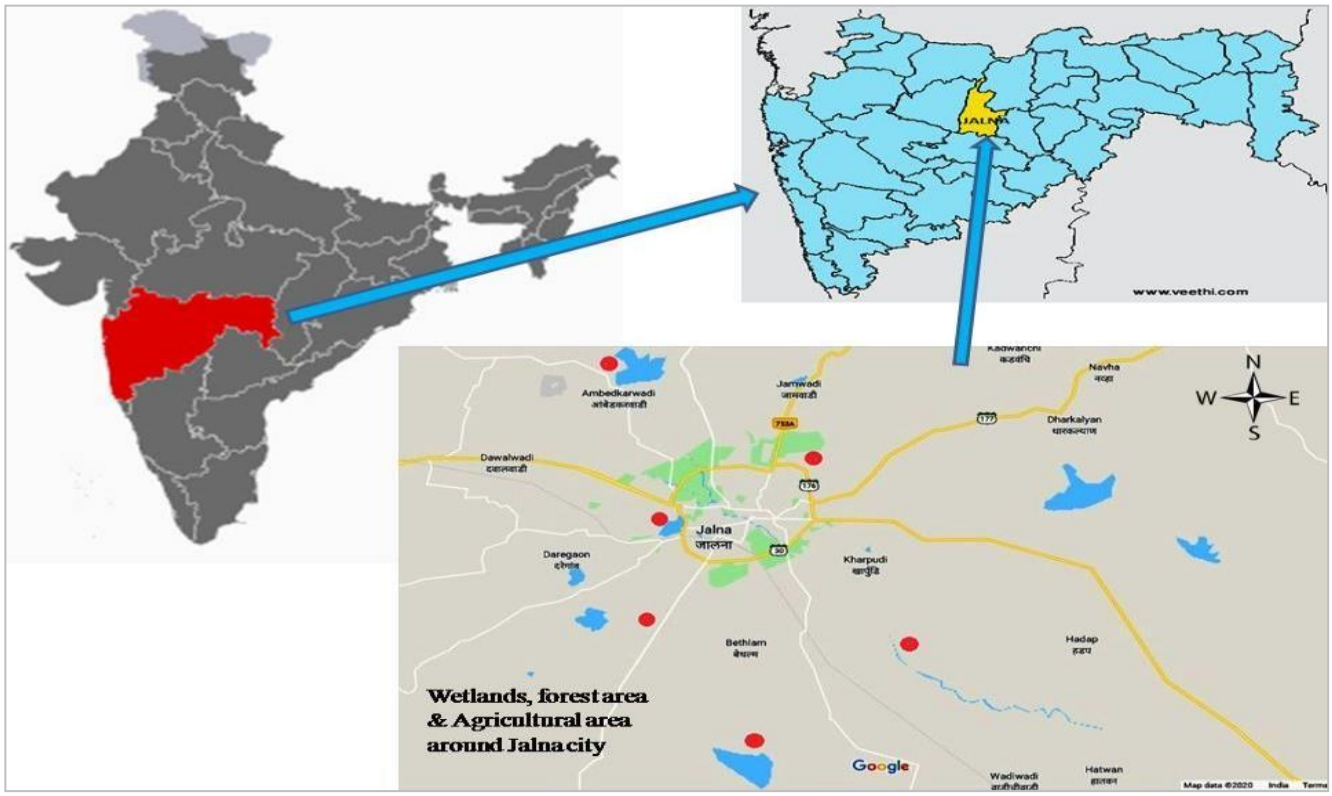

Fig.1. Map showing the study area in and around Jalna city.

Methods:

The bird surveys carried out above mentioned areas bimonthly from June 2018 to December 2019. Survey of birds made by digital (Lumix MDC-FZ 1000 and Canon PowerShot SX540HS) Digital camera (10x20) for keeping the birds' record. We made direct observations and species, noting of birds by walking on the roads, tracks, wetlands, grasslands and agricultural areas. These observations were carried out at different spots around the large wetlands, forest and agricultural areas. Birds were identified following [20, 21 & 22]. After identification we made family wise and location wise distribution. The status of birds was made by using habitat type and used criteria's like Resident (R) - if a bird was seen all throughout the year (not necessarily nesting). Local migrants (LM): Local migrants found in the study area irregularly, but are a resident of India. Winter migrants (WM): if a bird was seen only during the period from December to February. Passage migrant (PM): a bird was seen only one or two times during the survey. Abundance of birds recorded as per [23] in which C: Common (commonly seen in study areas), VC: Very common (very commonly seen), R: rare (Seen only one or two times), NR: Not rare (Seen most of the times but not common).

IV. RESULTS

In the present study, we found total 97 species of birds belonged to 48 families recorded in and around Jalna urban (Table 1.). The Birds sighted in and around Jalna urban are shown in Fig. 5-8. Maximum number of bird species recorded in five families, including Accipitridea, Anatidae, Ardeidea, Muscicapidea and Sturnidea each with five species. These followed by three families Rallidae, Ciconiidae, Thresiornithidae each had four species. Seven families, including Alcedinidae, Cisticolidae, Columbidae, Motacillidae, Nectariniidae, Passeridae and Phasianidae each recorded with three species of birds. Six families,

including Charadriidae, Corvidea Cuculidae, Leiothrichidae, Scolopacidae and Sylviidae each observed with two species. While the remaining twenty-seven avian families each was with one species (Table 2).

The highest number of 68 bird species observed in agriculture areas (Farmland) around Jalna city, 57 species seen in forest areas, 41 species recorded from Kundalika river, whereas at wetlands like Motilake, Ghanewadi and Revgan lake each found with 32 bird species (Fig. 2). The status and abundance of bird species in and around Jalna city are given in Table 1. As per criterion of status 72 (74.22%) birds species were residential, 9 (9.27%) were winter migrant, some were 12 (12.37%) local migrant and 4 (4.12%) found to be passages migrants (Fig. 3).

The residential bird species observed in Jalna were Red lapwing, House crow, House sparrow, Asian koel, Common myna, Cattle egret, Red vented Bulbul, Indian roller, Black Drongo, Red-naped ibis, Black headed ibis, Indian peafowl, Little cormorant, Black silt etc. (Fig. 7). Winter migrant species were Greater flamingoes, Eurassian spoonbills, Painted stork, Bar headed goose, Barn swallows, Common sandpiper, Ruddy Shelduck. The passage migrant was Fish eagle, Common hoopoe, Oriental honey buzzard, Rosy starling. Local migratory birds were Oriental darter, the wooly necked stork, the greater egret, glossy ibis, common Pochard, Eurasian cute, Asian open bill, Grey horn bill yellow wagtail, black headed oriole (Fig. 5).

Considering criteria of abundance in and around Jalna city 43 (44.32%) birds species were commonly seen, 18 (18.55%) species were very common, 27 (27.83%) species were not rare but not common whereas 9 (9.27%) species were found to be very rare (Fig. 4). The most abundant and very commonly seen bird species were Blue rock pigeon, Laughing dove, Common myna, Pond heron, Cattle egret, White breasted kingfisher, Black Drongo, Green Bee-eater, Red vented Bulbul, Little cormorant, Black silt, Indian spot billed duck etc. (Fig. 8). The commonly seen bird species in urban, agriculture and forest areas were House crow, House sparrow, Brown-headed crow, Jungle warbler, Brahmin starling, Indian ring dove, Parakeet, Black feather kite, Asian koel while the same at wetlands and Kundlika River were Water hen, Baya weaver bird, Greater egret, River turn, Rose, Ring parakeet, Baya weaver etc. (Fig. 6 & 7). The uncommon (not rare) species were Shikra, Common Kingfisher, Yellow wattled lapwing, Common raven, Jungle bush quail, Grey headed swamphen, common canary. Rare species of bird in Jalna were Common hoopoe, Spotted owlet, Wooly necked stork, Coppersmith Barbet and Yellow fronted woodpecker, Indian Grey hornbill (Fig. 6 & 7).

V. DISCUSSION

Jalna district has different habitats suitable for the growth and development of birds. After conducting the present study, we found rich avian fauna, i.e. total 97 species of birds belonged to 48 families recorded in and around Jalna urban. The families like Anatidae, Ardeidea, Accipitridea, Muscicapidea and Sturnidea observed to be dominant each with five species of birds. Regarding this, in similar studies in and around Nanded urban [13] reported 151 species of birds belonged to 44 families and 16 orders. The present study is confirmatory with finding of following researchers. According to [24] noticed family Ardeidae was dominant and consist of 8.82% out of total 37 families of bird species followed by Cuculidae, Muscicapidae and Columbidae constitute 5.88% of families each. According to [19] the family Ardeidae (07 species) dominated the avifauna, followed by Anatidae, Columbidae, Turdinae (6 species each), Cuculidae (5 Species), Rallidae, Pycnonotidae (4 species each) Cionidae, Charadriidae, Pisttacidae, Alcedinidae, Hirundinidae, Paridae, Passerinae (3 species each) at Majalgaon Reservoir in Beed district. The dominane of five families like Anatidae, Ardeidea, Accipitridea, Muscicapidea and Sturnidea in present study might be due to the availability of food and shelter for bird species. As Jalna district have varied habitats like Wetlands (lakes and river), Rivers, Forest cover, Grassland and Agricultural fields, beside the district are near to Jayakwadi water reservoir and Godawari basin of Marathwada region.

In the present study, we recorded the highest number of bird species (66) at Agriculture fields (Farmland) followed by forest and grassland (57), Kundalika River near to Jalna urban (41) and wetlands (32). Several researchers reported the distribution of avian fauna of different habitats. [25] reported 61 species of birds from different habitats present at the Aurangabad university campus, including watershed catchments, flowering tree shelters and marshy areas. Total 168 species of birds belonging to 53 Families and 15 Orders reported from the Godavari River Basin in Nanded District [12]. About 84 species of birds belonging to 15 orders and 30 families recorded from Majalgaon Reservoir of Beed District [19]. The highest number of bird species in agriculture and forest area may be due to preference of birds for shelter (nesting), food in the form of grains, insect, fruit plant. As there is less human disturbance compared to other areas like lakes and river. But in some areas, we noticed birds facing problem due to cutting of trees, agriculture expansion, pesticide spray, noise pollution and other human interference.

As per criterion of Status in present study 72 (74.22%) bird species were residential, 9 (9.27%) were winter migrant, some were 12 (12.37%) local migrant and 4 (4.12%) found to be passages migrants. Out of 154 species of birds, 128 species were Resident, 20 were Winter Migrant, 03 were Breeding Migrant, 02 were Passage Migrant and 01 was Vagrant species [26]. Out of the total bird species, 109 (45.23%) are resident, 95 (39.42%) are resident migrant and 37 (15.35%) are migratory species in the Gosekhurd region of Godavari basin, across Wainganga river [19]. A different view reported by [19] out of 84 species of birds, 33 were resident common and rest 51 showed migrant common, residential migrant common, uncommon rare, migrant rare, resident rare,

seasonally migrant common, uncommon, rare and breeding migrant rare. Regarding migratory birds mentioned in the present study are similar to the findings of [19] who reported Majalgaon Reservoir is suitable for the birds, that attracts many migratory birds like large egret, white bellied heron, purple heron, Asian open bill stork, white nacked stork, greater flamingo etc. According to [18] Open billed storks were seen during the month of January and February when water shrinks excessively and exposed of snails. Red during January and February wattled Lapwing, common sandpiper; little ringed Plover was seen in abundance on the banks during the last week of January. The arrival of birds coincides with a reduction in water level, where they avail the food easily by probing into mud. Similarly, in the present study, we found that open billed stork recorded abundantly at Ghanewadi Lake; common sandpiper, black wing silt, painted stork, spoon bills, black ibis recorded at motilake and Revgaon Lake.

Considering the abundance of avian fauna present study shows in and around Jalna city 43 (44.32%) bird species were commonly seen, 18 (18.55%) species were very common, 27 (27.83%) species were not rare but not common whereas 9 (9.27%) species were found to be very rare. The present study agrees with findings of [26] who found out of 154 bird species, 23 species were abundant, 60 species were common, 53 species were uncommon, 08 species were occasional and 10 species were rare in this habitat. In their study, they reported most abundant species were house crow, jungle babbler, Red-vented Bulbul, Black Drongo, Common tailor bird, Common myna, Brahminy starling, White-throated Munia, House sparrow etc. According to [4] out of 140 species of birds, 22 (16%) of birds were very commonly seen, 59 (42%) species were common, 45 (32%) bird species were not rare and 14 (10%) species rare. The rare species were short toed snake eagle, brown shirke, Egyptian vulture, little crake and white throated fantail. The uncommon species in the present study like Shikra, Yellow wattled lapwing, Common raven, Jungle bush quail, Grey headed swamphen and rarer species like Common hoopoe, spotted owlet, Wooly necked stork, Yellow fronted woodpecker and Indian Grey hornbill may be related with some secrets of ecosystem and food web. Thus, further study should be carried out in the investigation of uncommon and rare species of birds in Jalna.

Figures and Tables

Table 1. Checklist of birds in and around Jalna city Maharashtra with Status and Abundance.

Sr. no	Family	*Scientific Names*	Common Name	Status	Abundance
1	Accipitridae	*Milvus migrans*	Pariah Kite	R	Not Rare
2	Accipitridae	*Elanus caeruleus*	Black-Winged Kite	R	Common
3	Accipitridae	*Pernis Ptilorhynchus*	Oriental Honey Buzzard	PM	Rare
4	Accipitridae	*Accipiter badius*	Shikra	R	Not Rare
5	Accipitridea	*Haliaeetus vocifer*	Fish Eagle	PM	Rare
6	Alaudidae	*Ammomanes phoenicura*	Rufous-Tailed Lark	R	Not Rare
7	Alcedinidae	*Alcedo atthis*	Common Kingfisher	R	Not Rare
8	Alcedinidae	*Ceryle rudis*	Pied Kingfisher	R	Not Rare
9	Alcedinidea	*Halcyon smyrnesis*	White Throated Kingfisher	R	Very common
10	Anatidae	*Anas poecilorhynca*	Indian Spot-Billed Duck	R	Common
11	Anatidae	*Tedorna ferruginea*	Ruddy Shelduck	WM	Common
12	Anatidae	*Anser indicus*	Bar Headed Goose	WM	Common
13	Anatidae	*Aythya ferina*	Common Pochard	LM	Not Rare
14	Anatidae	*Dendrocygna Javanica*	Indian Whistling Duck	LM	Common
15	Anhingidae	*Anhinga Melanogaster*	Oriental Darter	LM	Common
16	Apodidea	*Apus pacificus*	Fork-Tailed Swift	R	Very Common
17	Ardeidae	*Ardea cinerea*	Grey Heron	WM	Rare
18	Ardeidae	*Ardea alba*	Greater Egret	LM	Common
19	Ardeidae	*Egretta garzetta*	Little Egret	R	Common
20	Ardeidea	*Ardoela grayii*	Indian Pond Heron	R	Very Common
21	Ardeidea	*Bulbulcus ibis coromandus*	Cattle Egret	R	Very Common
22	Bucerotidea	*Ocyceros birostris*	Indian Grey Hornbill	LM	Rare
23	Campephagidae	*Pericrocotus Cinnamomeus*	Small Minivet	R	Not Rare
24	Charadriidae	*Vanellus indicus*	Red Wattled Lapwing	R	Very Common
25	Charadriidae	*Vanellus malabaricus*	Yellow Wattled Lapwing	R	Not Rare
26	Ciconiidae	Anastomus oscitans	Asian Open Bill	LM	Common
27	Ciconiidae	*Ciconia episcopus*	Woolly-Necked Stork	LM	Rare

28	Ciconiidae	*Ciconia boyciana*	Oriental Stork	WM	Not Rare
29	Ciconiidae	*Mycteria leucocephala*	Painted Stork	WM	Common
30	Cisticolidae	*Prinia inornate*	Plain Prinia	R	Common
31	Cisticolidae	*Prinia socialis*	*Ashy Prinia*	R	Common
32	Cisticolidae	*Orthotomus Sutorius*	Common Tailorbird	R	Not Rare
33	Columbidae	*Columba livia*	Blue Rock Pigeon	R	Very Common
34	Columbidae	*Streptopelia Decaocta*	Indian Ring Dove	R	Common
35	Columbidae	*Spilopelia Senegalensis*	Laughing Dove	R	Very Common
36	Coraciidae	*Coracias Benghalensis*	Indian Roller	R	Common
37	Corvidea	*Corvus splendens*	House Crow	R	Common
38	Corvidea	*Corvus corax*	Common Raven	R	Not Rare
39	Cuculidae	*Centropus sinensis*	Crow Pheasant	R	Common
40	Cuculidae	*Eudynamys Scolopacea*	Asian Koel	R	Common
41	Dicruridea	*Dicrurus adsimils*	Black Drongo	R	Very Common
42	Estrildidae	*Euodice Malabarica*	White-Throated Munia	R	Common
43	Fringillidea	*Serinus canaria*	Common Canary	R	Not Rare
44	Hirundinidae	*Hirundo rustica*	Barn Swallow	WM	Common
45	Laniidae	*Lanius schach*	Long-Tailed Shrike	R	Common
46	Laridea	*Sterna aurantia*	River Tern	R	Common
47	Leiothrichidae	*Argya malcolmi*	Large Grey Babbler	R	Very Common
48	Leiothrichidae	*Turbidoides stratus*	Jungle Babbler	R	Very Common
49	Megalaimidae	*Psilopogon Haemacephalus*	Coppersmith Barbet	R	Not Rare
50	Meropidea	*Merops orientalis*	Green Bee-Eater	R	Very Common
51	Motacillidae	*Motacilla citreola*	Citrine Wagtail	R	Common
52	Motacillidae	*Motacilla alba*	White Wagtail	R	Not Rare
53	Motacillidea	*Motacilla flava*	Yellow Wagtail	LM	Common
54	Muscicapidae	*Copsychus saularis*	Oriental Magpie Robin	R	Common
55	Muscicapidae	*Copsychus fulicatus*	Indian Robin	R	Common
56	Muscicapidae	*Muscicapa Dauurica*	Asian Brown Flycatcher	R	Common
57	Muscicapidae	*Monticola Solitarius*	Blue Rock Thrush	R	Not Rare
58	Muscicapidae	*Ficedula nigrorufa*	Black-And-Orange Flycatcher	R	Not Rare
59	Nectariniidae	*Arachnothera Longirostra*	Little Spider Hunter	R	Not Rare
60	Nectariniidae	*Leptocoma Zeylonica*	Purple-Rumped Sunbird	R	Not Rare
61	Nectariniidae	*Cinnyris asiaticus*	Purple Sunbird	R	Common
62	Oriolidae	*Oriolus xanthornus*	Black-Hooded Oriole	LM	Rare
63	Passeridae	*Passer domesticus*	House Sparrow	R	Common
64	Passeridae	*Anthus rufulus*	Paddy Field Pipit	R	Common
65	Passeridae	*Ploceus manyar*	Streaked Weaver	R	Common
66	Phalacrocoracidae	*Microcarbo niger*	Little Cormorant	R	Very Common
67	Phasianidae	*Perdicula asiatica*	Jungle Bush Quail	R	Not Rare
68	Phasianidae	*Galloperdix Spadicea*	Red Spur Fowl	R	Not Rare
69	Phasianidea	*Pavo cristatus*	Indian Peafowl	R	Common
70	Phoenicopteridae	*Phoenicopterus*	Greater Flamingo	WM	Common

		Roseus			
71	Phylloscopidae	*Phylloscopus Collybita*	Common Chiffchaff	R	Common
72	Picidae	*Dendrocopos Mahrattensis*	Yellow-Crowned Woodpecker	R	Very Rare
73	Picnonotidea	*Pycnonotus cafer*	Red Vented Bulbul	R	Very Common
74	Ploceidea	*Ploceus philippinus*	Baya Weaver Bird	R	Common
75	Psittaculidae	*Psittacula krameri*	Rose Ringed Parakeet	R	Very Common
76	Rallidae	*Fulica atra*	Eurasian Coot	LM	Common
77	Rallidae	*Rallina Eurizonoides*	Slaty-Legged Crake	R	Not Rare
78	Rallidae	*Amauromis Phoenicurus*	White Breasted Water Hen	R	Very Common
79	Rallidea	*Porphyrio Poliocephalus*	Grey-Headed Swamphen	R	Not Rare
80	Recurvirostridae	*Himatopus Himantopus*	Black Winged Silt	R	Very Common
81	Rhipiduridae	*Rhipidura albicollis*	White-Throated Fantail	R	Not Rare
82	Scolopacidae	*Tringa glarila*	Wood Sandpiper	R	Very Common
83	Scolopacidea	*Tringa hypoleucos*	Common Sandpiper	WM	Very Common
84	Strigidae	*Athene brama*	Spotted Owlet	R	Rare
85	Sturnidae	*Sturnus contra*	Pied Myna	R	Common
86	Sturnidae	*Pastor roseus*	Rosy Starling	PM	Common
87	Sturnidae	*Gracupica contra*	Asian Pied Starling	R	Not Rare
88	Sturnidae	*Acridotheres tristis*	Common Myna	R	Common
89	Sturnidae	*Sternus pagodarum*	Brahminy Sterling	R	Common
90	Sylviidae	*Chrysomma sinense*	Yellow-Eyed Babbler	R	Common
91	Sylviidae	*Argya subrufa*	Rufous Babbler	R	Not Rare
92	Threskiornithidae	*Threskiornis Melanocephalus*	Black-Headed Ibis	LM	Common
93	Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	LM	Common
94	Threskiornithidae	*Pseudibis papillosa*	Red Naped Ibis	R	Not Rare
95	Threskiornithidae	Platalea leucorodia	Eurasian Spoonbill	WM	Common
96	Turnicidae	*Turnix suscitator*	Barred Buttonquail	R	Not Rare
97	Upupidae	*Upupa epops*	Common Hoopoe	PM	Rare

R-Resident, WM-Winter migrant, LM- Local migrant, PM-Passage migrant

Table 2. Family wise distribution of Avian fauna in and around Jalna Urban

Sr. No.	Family	No. of Species	Sr. No.	Family	No. of Species
1	Accipitridae	5	25	Bucerotidea	1
2	Anatidae	5	26	Campephagidae	1
3	Ardeidae	5	27	Coraciidae	1
4	Muscicapidae	5	28	Dicruridea	1
5	Sturnidae	5	29	Estrildidae	1
6	Rallidae	4	30	Fringillidea	1
7	Ciconiidae	4	31	Hirundinidae	1
8	Threskiornithidae	4	32	Laniidae	1
9	Alcedinidea	3	33	Laridea	1
10	Cistocolidae	3	34	Megalaimidae	1
11	Columbidae	3	35	Meropidea	1
12	Motacillidae	3	36	Oriolidae	1
13	Nectariniidae	3	37	Phalacrocoracidae	1
14	Passeridae	3	38	Phoenicopteridae	1
15	Phasianidae	3	39	Phylloscopidae	1
16	Charadriidae	2	40	Picidae	1

17	Corvidea	2	41	Picnonotidea	1
18	Cuculidae	2	42	Ploceidea	1
19	Leiothrichidae	2	43	Psittaculidae	1
20	Scolopacidae	2	44	Recurvirostridae	1
21	Sylviidae	2	45	Rhipiduridae	1
22	Alaudidae	1	46	Strigidae	1
23	Anhingidae	1	47	Turnicidae	1
24	Apodidea	1	48	Upupidae	1

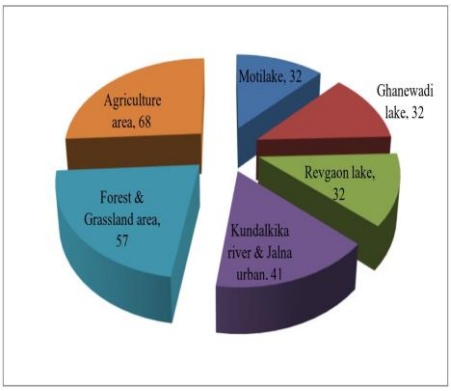

Fig. 2. Distribution of Avian fauna.

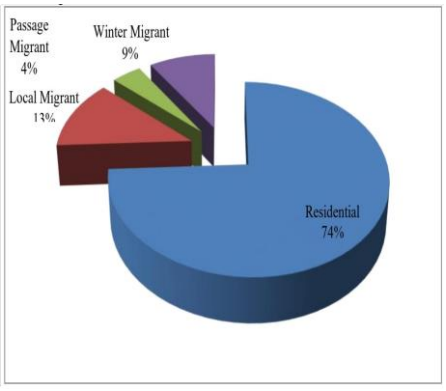

Fig. 3. Status of Avian Fauna

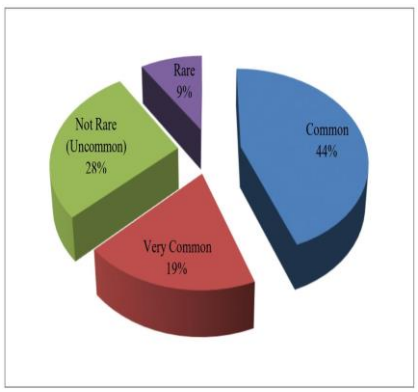

Fig. 4. Abundance of Avian fauna.

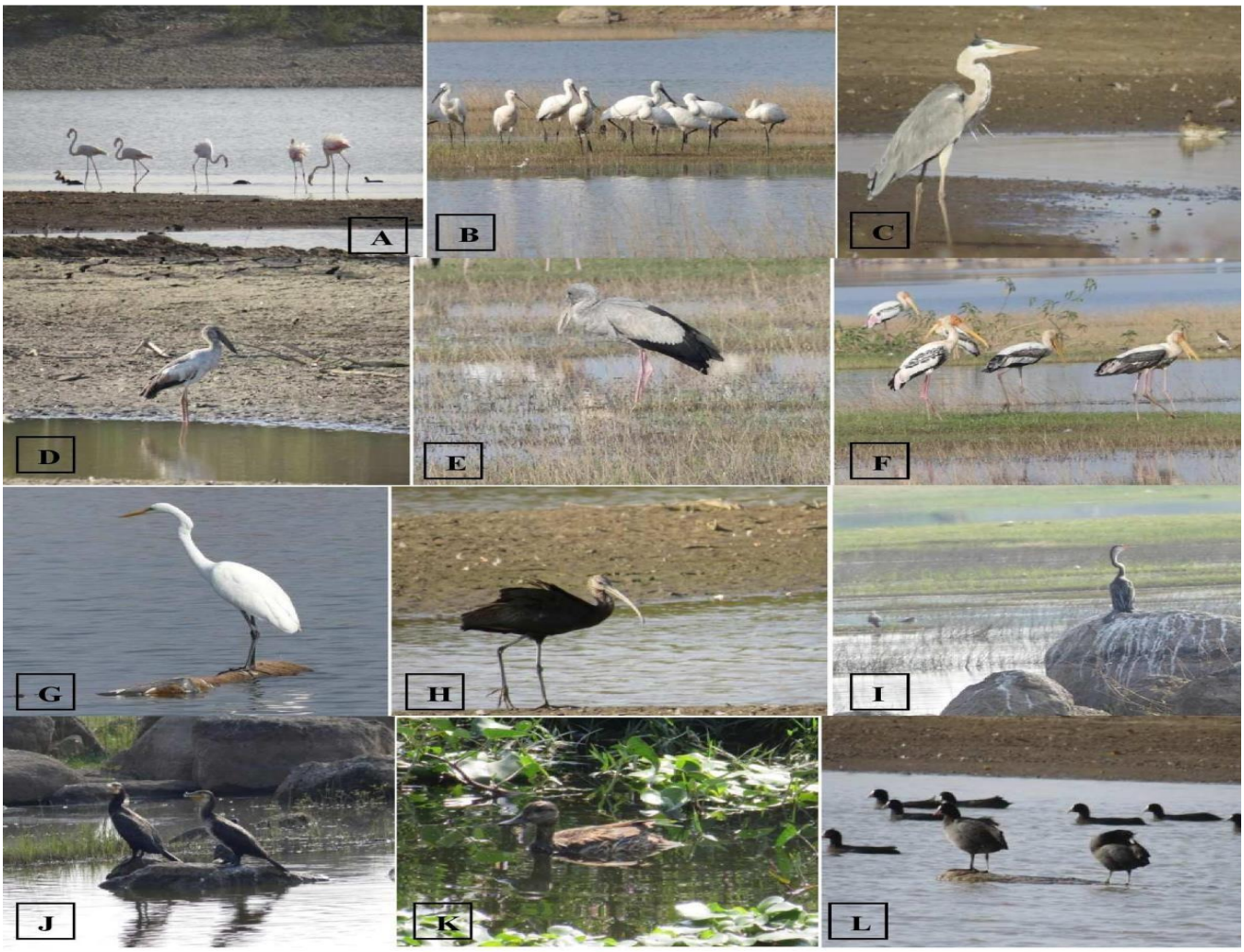

Fig. 5. Avian fauna at Wetlands A. Greater Flamingo, B. Eurasian Spoonbill C. Grey Heron, D. Oriental stork, E Asian open Bill, F. Painted stork, G. Greater Egret, H. Glossy Ibis, I. Oriental darter, J. Little cormorant, K. Black-billed whistling duck, L. Eurasian Coot

Fig. 6. Avian fauna at Agricultural areas: A. Blue Rock Thrush, B. Rosy Starling, C. Rufous Tailed Lark, D. Indian Roller, E. White-Throated Munia, F. Black Drongo, G. Ringed Dove, H. Brahmin Starling, I. Purple Sunbird, J. Green Bee-Eater, K. Common Hoopoe, L. Wooly Necked Stork

Fig. 7. Avian fauna at Forest and Grassland areas: A. Indian Peafowl, B. Coppersmith barbet, C. Yellow Crested Woodpecker, D. Indian Robin , E. Jungle babbler F. Yellow wagtail G. Indian Grey Hornbill H. Asian Koel, I. Black Winged Kite J. Black headed ibis K. Black ibis Little L. Little Egret

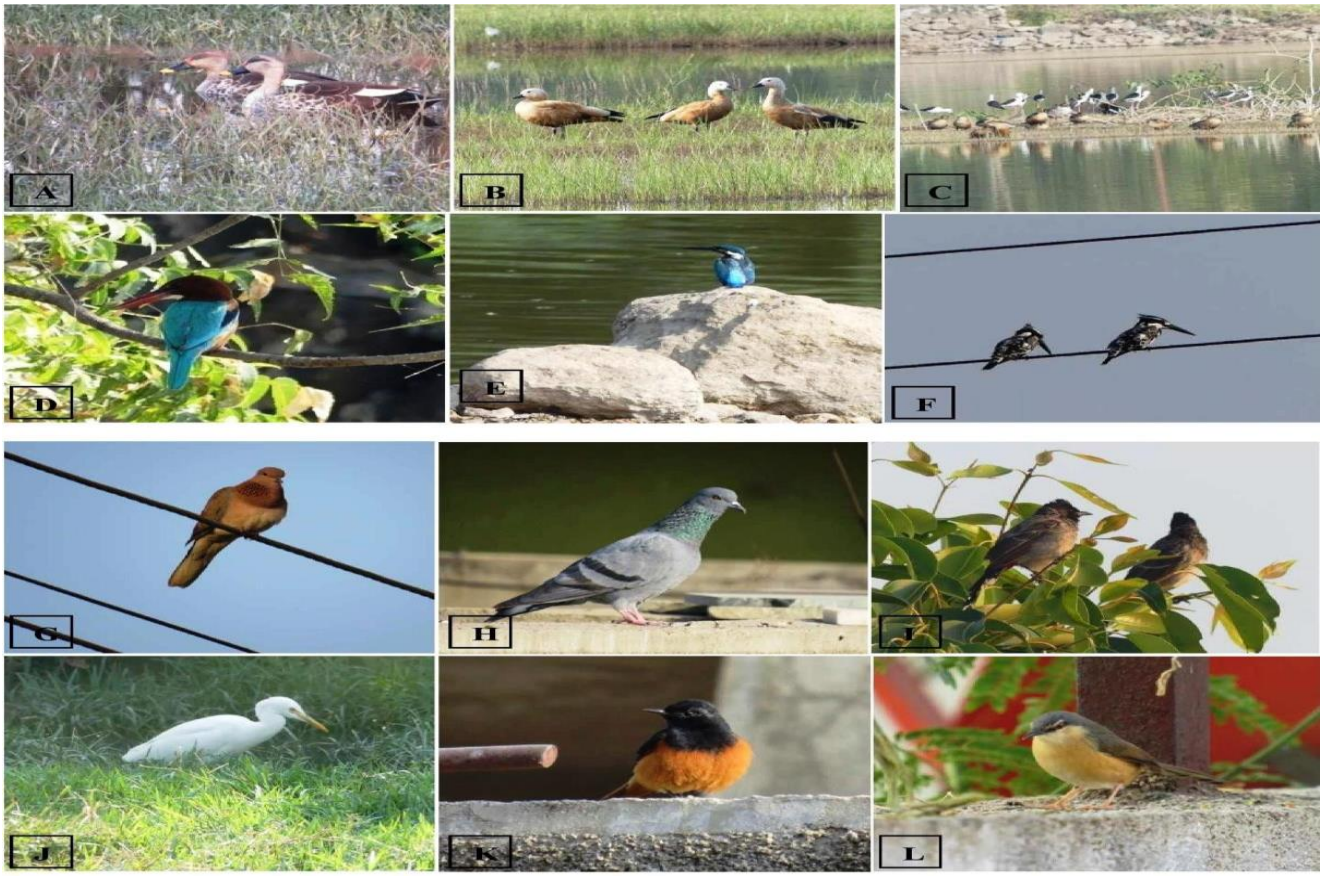

Fig. 8. Avian fauna at Wetlands and Commonly Seen birds in Urban area: A. Spotted bill duck, B. Ruddy Shelduck, C. Lesser Whistling duck, D. White throated kingfisher, E. Common Kingfisher, F. Pied Kingfisher, G. Loughing Dove, H. Black rock pigeon, I. Red vented Bulbul, J. Cattle Egret, K. Black Orange Flycatcher, L. Ashy Prinia

VI. CONCLUSION AND FUTURE SCOPE

The present investigation shows the abundance of avian fauna in and around Jalna urban which is a good indicator from an ecological point of view. The large number of bird species observed at Agricultural fields, Forest and Grassland areas compared to River basin and wetlands. The large number of migratory birds like Greater flamingos, Eurasian spoonbill, Painted stork, Asian open bill, Ruddy Shelduck etc. arrives at Wetlands in Jalna district during the winter season. However, there are also some uncommon and rare species of birds associated with secrets of ecosystem and food web. Researchers have larger scope to explore the avian fauna of Jalna district, which not covered in this study. From a conservation point of view, there is a need of time to protect forest areas and wetlands through proper administration and legislation. Beside plantation of bird attracting plants and development of new habitat may lead to increase in the species richness in the district.

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REFERENCES

[1] C. Bhatnagar K. Jani, V. Sharma, et al., *"*Aquatic bird diversity of Lake Bari (A component of Udaipur important bird area) with a special note on its habitat management''. Proceedings of Taal 2007: The 12th World Lake Conference, International Lake Environment Committee Foundation, Shiga, Japan, pp. **554-557, 2008.**

[2] C. Sashikumar, J. Praveen, M. J. Palot, P. O. Nameer, "A checklist of birds of Kerala". Malabar Trogon **7** (**3), 2–13, 2010**. DOI**:** https://doi.org/10.11609/jott.2001.7.13.7983-8009

[3] M.S. Mewada, "Ecological Study and Avian Faunal Diversity of Narmada River and its Surrounding Areas of Dindori District (M.P.)**",** International Journal of Scientific Research in Biological Sciences, **5** (**1**), pp.**18-27**, **2018**.

[4] A. D. Tiple, N. Kulkarni, S. Paunikar and K. C. Joshi, "Avifauna of Tropical Forest Research Institute Campus, Jabalpur, Madhya Pradesh, India", Indian Journal of Tropical biodiversity, **18** (**1**): **133-141, 2010.**

[5] G. Chopra, A. K. Tyor, S. Kumari and D. Rai, "Status and conservation of avian fauna of Sultanpur National Park Gurgaon, Haryana (India)", J. Applied and Natural Science, **4** (**2**), **207-213, 2012.** https://doi.org/10.31018/jans.v4i2.251

[6] O. S. Devi, M Islam, Das, J. and P. K. Saikia, "Avian-fauna of Gauhati University Campus, Jalukbari, Assam", The Ecoscan, **6** (**3** & **4**): **165 -170**, **2012**.

[7] V. Jindal, G. S. Dhaliwal, O. Koul, "Pest management in 21st century: roadmap for future", *Biopesticides International*, **9, 1–22. 2013.**

[8] Vikas Kumar, "Biodiversity of Avian Fauna of Vansda National Park, Gujarat": Conservation Issues. Nature Environment and Pollution Technology, **14** (**3**), **70 9 -71 4, 2015**.

[9] M. A. Kichloo, A. Sohil, P. Kumar, and N. Sharma, "Avian

diversity at new campus of University of Jammu, Jammu and Kashmir", Researcher: A Multidisciplinary Journal, **13** (**2**), **28-40, 2018.**

[10] H. Abdulali, "*Checklist of the Birds of Maharashtra with Notes on their Status around Bombay, Maharashtra'',* Bombay Natural History Society, Bombay, pp. **16**, **1981**.

[11] A. Prasad, "Annotated checklist of the birds of western Maharashtra", *Buceros* **8** (**2** & **3**), **1–174, 2003**.

[12] D. Yardi, S. S. Patil and R. G. Auti, "Diversity of Avian Fauna from Salim Ali Lake of Aurangabad", Paper presented in 21st meet of bird's lovers of Maharashtra held at Nanded on 3rd, 4th April **2004**.

[13] A. N. Kulkarni, V. S. Kanwate, **V. D**., "Deshpande, Birds in and around Nanded city, Maharashtra", Zoo s Print Journal, **20** (**11**), **2076-2078, 2005**. https://DOI:10.11609/JoTT.ZPJ.1321.2076-8

[14] Sujit Narwade and M. M. Fartade, "Birds of Osmanabad district of Maharashtra, India", *Journal of Threatened Taxa,* **3** (**2**), **1567-1576, 2011**. DOI: 10.11609/JoTT.o2462.1567-76

[15] J. V. Balkhande, C. S., Bhowte, A. N. Kulkarni, "Checklist of Birds of River Godavari, Dhangartakli near Purna, Dist. Parbhani, Maharashtra'', Bionano Frontier, **5** (**2**). **2012**.

[16] N. V. Harney, "Avifaunal diversity of Ghotnimbala lake near Bhadrawati, Chandrapur, Maharashtra, India", International Journal of Life Sciences, **2** (**1**), **79-83, 2014**.

[17] S. P. Chavan, D. Dudhmal, S. Hambarde A. N. Kul, "Birds from Godavari River Basin in Nanded District of Maharashtra State, India", Annotated status and new reports, International Journal of Current research and Academic Review, **3** (**4**), **328-351, 2015**.

[18] D. P. Katore, "Avian fauna of Aundha dam in Aundha Nagnath dist. Hingoli", International J. of Life Sciences, **5** (**1**), **114-116, 2017.**

[19] R. T. Pawar, T. S. Pathan, Y. M. Bhosale, "Avifaunal study of Majalgaon Reservoir and their tributaries, District Beed, Marathwada region of Maharashtra, India", International Journal of Scientific Research in Biological Sciences, **6** (**4**), **51-55, 2019**. DOI: 10.26438/ijsrbs/v6i4.5155

[20] S. Ali, S. D. Ripley, ''*Compact Edition of Handbook of the Birds of India and Pakistan*'', Bombay Natural History Society and Oxford University Press, Bombay, pp. **737**, **1983**.

[21] R. Grimmett, C. Inskipp, T. Inskipp, "*Birds of the Indian Subcontinent",* Christopher Helm Publishers Ltd., London, United Kingdom, pp. **528, 2011.**

[22] P. C., Rasmussen, J. C Anderton, "Birds of South Asia", The Ripley guide, Smithsonian Institution and Lynx Edition, Washington, D.C. and Barcelona Vols. **1** and **2**, **2005**.

[23] Raju Kasambe, Tarique Sani, "Avifauna in and around Nagpur city of Maharashtra -an annotated, authentic, contemporary checklist", **2009**.

[24] Nagma Sayyad, Amir Dhamani, "Diversity and status of avifauna from Pranhita River sub basin in Sironcha Tehsil of Maharashtra State, India", International Journal of Zoology Studies, **2** (**5**), **43-51, 2017.**

[25] G. B. Rasal, B. L. Chavan, "Diversity of Birds in Local Ecosystem Aurangabad, Maharashtra, India", Journal of Economics and Sustainable Development, **2011**.

[26] A. Dorlikar and P. Charde, "Studies on Avian Diversity, Abundance and Their Status at Raj Bhavan, Nagpur, Maharashtra", International Journal of Advanced Scientific Research and Management, **4** (**4**), **21- 27, 2019.**

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