INTRODUCTION

The avian population in different ecosystems has become an effective element in protecting biodiversity and determining appropriate conservation activities. Bird population estimation is important for understanding group structure, niche relationship, habitat preference and other behavioural aspects (Pawar et al., 2019). Birds are a structural part of entire planet, key species in sustaining ecological equilibrium and are needed for human sustenance similar to other biotic components (State of India’s Birds, 2020). They serve as pointer species of a particular region (Blair, 1999); bioindicator for understanding environmental issues (Newton and Anim, 1995); demolish insect pests, scavenge carrions, pollinate flowers, bio-fertilizers, disperse seeds (Niemi, 1985; Padmavathy et al., 2010; Whelan et al., 2015) and alter the environment in way beneficial for other species. Wetlands sustain distinct communities of plants and animals, considering this habitat as a ‘Biodiversity hotspot’ within an area or landscape (Gopal and Sah, 1993). These serve as crucial habitat for wetland-dependent and water-associated birds representing breeding, feeding and roosting sites, vital for their conservation and management (James et al., 2001; Harisha and Hosetti, 2018; Vishwakarma et al., 2020). Avian species distribution patterns are determined by their mobility, habitat suitability, food availability, geo-physiological structure of wetland (Akosim et al., 2008).

India harbors 7,57,060 wetlands (with an area ≈ 15.26 Mha) embracing 1,88,470 Inland (Natural and Man-
made) wetland; 13,033 Coastal (Natural and Man-made) wetland and 5,555 wetlands (<2.25 ha). The state of Haryana has a total of 11,970 wetlands that covers an area of about 42,478 ha, accounting 0.86% of the state geographic area (National Wetland Atlas, 2011). Due to favourable environmental conditions, approximately 450 avian species had reported spending time for their necessities in this state (Goyal et al., 2014). Extensive work has been done by respective researchers (Gupta and Kaushik, 2013; Goyal et al., 2014; Chopra and Jakhar, 2016; Rai et al., 2017; Kumar and Sharma, 2018; Rai et al., 2019; Kumar and Sahu, 2020) in this state on distribution, ecology, diversity and conservation status of birds. Different wetlands of any site function as balancing reservoir to sustain the native biodiversity. The presence of diverse plantations, widespread agricultural fields in and around Ottu Reservoir, located in village Ottu, district Sirsa, Haryana endows appropriate habitat for avifaunal diversity. The reservoir serves as foraging, roosting, breeding grounds for resident species and stopover or wintering grounds for migratory species. Depending upon various conditions such as climate, habitat use and resources stability of a reservoir determines the presence of aerial foraging avifauna (Basu et al., 2018). The present study was conducted to fill the knowledge gap about the information on avifauna in Ottu Reservoir along with its ecological significance.

MATERIALS AND METHODS

Study area
The Ottu Reservoir is situated at district Sirsa, Haryana, with its geographical coordinates 29°29′39″N and 74°54′38″E, about 12 km west of Sirsa (Fig. 1 and 2). It is a perennial lake that serves as a feeder for two Ghaggar canals (the northern and the southern canals) that carries water to adjoining areas and northern Rajasthan. It covers an area of about 950 acres with depth of approximately 15 feet (Goyal et al., 2014). The flow of lake is restricted by Ottu weir situated at 29°29′21″N and 74°54′38″E near village Ottu (about 8 miles away from Sirsa) constructed in 1896 on Ghaggar-Hakra river of Haryana. The average annual rainfall of the district is approximately 325-400 mm, with mean temperatures ranging from 4°C in winter to 48°C in summer (Goyal et al., 2016). The lake provides tremendous habitat due to diverse trees, bushes, aquatic vegetation, agricultural fields, floral species such as Eucalyptus spp. (Safeda), Azadirachta indica (Neem), Ficus benghalensis (Banyan), Acacia nilotica (Kikar), Ziziphus jujube (Jujube), Dalbergia sissoo (Shisham), Ficus religiosa (Peepal), Acacia arabica (Babool), Eichhornia (Water hyacinth) and attracts a large number of avian species considering as a suitable place for them.

Methodology
An ornithological survey was conducted periodically at selected study site from October 2019 to September 2020 in three respective phases viz., Morning, Noon and Evening phase. Data was recorded with the help of various methods such as Scan sampling (Altmann, 1974), Point and Line Transect (Gaston, 1975; Sutherland et al., 2005) and presented in the form of checklist of avian species. Bird’s observation was made with binoculars and Canon Power shot SX50HS digital cameras, and identification was done with the help of field guides i.e., Grimmett et al. (2015); Arlott (2015); Grimmett and Insipp (2019); Kalsi et al. (2019) and authenticated avian database (IUCN Red list of Threatened Species, Merlin bird iD and Oriental Bird Club image database). A checklist of recorded bird species was prepared and classified based on a common name, scientific name, alternative name, order, family and genus using Praveen et al. (2016), Praveen et al. (2019) and IUCN (2020). The assessment of Residental/Migratory status was done based on the presence or absence method (Grimmett and Insipp, 2003; Kumar et al., 2016). The abundance status of species was calculated depending on the frequency of sightings and the definite criteria of Kumar and Gupta (2009), with some modifications. The criterion was quite different for both residential and migratory species. For residential species, abundance status was classified as Abundant (observed 16-21 times/21 visits), Common (11-15 times/21 visits), Fairly common (6-10 times/21 visits) and Rare (1-5 times/21 visits); whereas for migratory species the criteria varies for two selected seasons of one year field survey i.e., Winter (October-March) and Summer (April-September). In the winter season, the status is assigned as: Abundant (observed 9-11 times/11 visits), Common (6-8 times/11 visits), Fairly common (3-5 times/11 visits) and Rare (1-2 times/11 visits) and in Summer season: Abundant (observed 9-10 times/10 visits), Common (6-8 times/10 visits), Fairly common (3-5 times/10 visits) and Rare (1-2 times/10 visits). The IWPA (1972), CITES (2012), and IUCN (2020) were used to assess the conservation status and population trends (Increasing ↑, Decreasing ↓, Stable → and Unknown?!) of the species. Feeding guilds were categorized into 8 guilds (Carnivore, Insectivore, Omnivore, Herbivore, Frugivore, Grainivore, Insect/ Nectarivore and Piscivore) based on direct observation and literature (Ali and Ripley 1987; Grimmett et al., 1999; Singh et al., 2020). The relative diversity (RDi) value of the families was calculated formula given by La Torre-Cuadros et al. (2007):

\[ RDi = \frac{\text{Number of bird species in a family}}{\text{Total number of bird species}} \times 100 \]

\[ \text{Eq. 1} \]
RESULTS AND DISCUSSION

A total of 114 species belonging 18 orders, 47 families and 91 genera (Table 1) were recorded from Ottu Reservoir, district Sirsa, Haryana during 21 periodic visits from October 2019 to September 2020. Due to the outbreak of COVID-19, periodic field visits from 26 March 2020 to 30 April 2020 were missed. During the present study maximum number of recorded bird species belonged to Order Passeriformes (41 species in 20 families) followed by Charadriiformes (17 species in six families); Pelecaniformes (12 species in two families); Anseriformes (9 species in single family); Coraciformes (5 species in three families); Columbiformes (5 species in single family); Cuculiformes and Gruiformes (each with four species in single family); Piciformes (three species in two families); Bucerotiformes (two species in two families); Accipitriformes, Ciconiiformes, Psittaci- formes and Suliformes (each with two species in single family) Galliformes, Phoenicopteriformes, Strigiformes, Podicipediformes (each with single species in single family) (Table 1). Goyal et al. (2014) also reported 64 migratory avian species comprising 44 genera, 27 families and 9 orders in Ottu Lake, Sirsa, Haryana. In accordance with previous records such as avifauna of Sultanpur National Park, Haryana (Chopra et al., 2012);
| Sr. No. | Order/Family/Common name | Scientific name | Resi-| Feeding | Abun-| Global | Conservation Status | Alternative name(s) followed by | IUCN (2020) | CITES (2012) | IWPA (1972) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | ANSERIFORMES (No. of Species=9 and No. of Family=1) | | | | | | | | | | |
| 1.1. Anatidae (9), RDi value= 7.89 | | | | | | | | | | |
| 1 | Indian Spot-Billed Duck | Anas poecilorhyncha | R | H | C | ↓ | LC | - | IV | - |
| 2 | Northern Shoveler | Spatula clypeata (Linnaeus, 1758) | WM | O | C | ↓ | LC | - | IV | - |
| 3 | Eurasian Wigeon | Mareca penelope (Linnaeus, 1758) | WM | H | FC | ↓ | LC | - | IV | - |
| 4 | Gadwall | Mareca strepera (Linnaeus, 1758) | WM | H | FC | ↑ | LC | - | IV | - |
| 5 | Common Pochard | Aythya ferina (Linnaeus, 1758) | WM | O | FC | ↓ | LC | - | IV | - |
| 6 | Common Teal | Anas crecca (Linnaeus, 1758) | WM | O | R | ? | LC | - | IV | - |
| 7 | Garganey | Spatula querquedula (Linnaeus, 1758) | WM | H | FC | ↓ | LC | - | IV | - |
| 8 | Lesser Whistling Duck | Dendrocygnus javanica (Horsfield, 1821) | SM | O | A | ↓ | LC | - | IV | - |
| 9 | Comb Duck | Sarkidiornis melanotos (Pennant, 1769) | R | H | R | ↓ | LC | II | IV | - |
| 10 | Grey Francolin | Francolinus pondicerianus (J.F. Gmelin, 1789) | R | O | R | → | LC | - | IV | Grey Patridge |
| 11 | Greater Flamingo | Phoenicopterus roseus Pallas, 1811 | R | O | R | ↑ | LC | - | IV | - |
| 12 | Rock Dove | Columba livia | J.F. Gmelin, 1789 | R | G | A | ↓ | LC | - | IV | Blue Rock Pigeon |
| 13 | Yellow-Footed Green Pigeon | Treron phoenicopterus (Latham, 1790) | R | F | C | ↓ | LC | - | IV | Yellow-legged Green pigeon |
| 14 | Eurasian Collared Dove | Streptopelia decaocto (Frisvadsky, 1838) | R | G | C | ↑ | LC | - | IV | Indian Ring Dove |
| 15 | Laughing Dove | Spilopelia senegalensis (Linnaeus, 1766) | R | G | FC | → | LC | - | IV | Little brown Dove, Senegal Dove |
| 16 | Spotted Dove | Streptopelia chinensis (Scopoli, 1786) | R | G | R | ↑ | LC | - | IV | - |

Table 1. Checklist of Avifaunal Species with their RDi value recorded in and around Ottu reservoir, Haryana (India).

Contd....
## Table 1. Contd……

### 5. CUCULIFORMES (No. of Species = 4 and No. of Family = 1)

#### 5.1. Cuculidae (4), RDi value - 3.51

| No. | Species Name | Scientific Name | RDi | Status | Remarks                  |
|-----|--------------|-----------------|-----|--------|--------------------------|
| 17. | Greater Coucal | Centropus sinensis (Stephens, 1815) | R   | C C → | LC - IV | Crow Pheasant |
| 18. | Asian Koel   | Eudynamys scolopaceus (Linnaeus, 1758) | SM  | O C → | LC - IV | Common Koel |
| 19. | Common Hawk-Cuckoo | Hierococcyx varius (Vahl, 1797) | SM  | In R → | LC - IV | Brainfever bird |
| 20. | Jacobin Cuckoo | Clamator jacobinus (Boddaert, 1783) | SM  | In R → | LC - IV | Pied Crested Cuckoo |

### 6. GRUIIFORMES (No. of Species = 4 and No. of Family = 1)

#### 6.1. Rallidae (4), RDi value - 3.51

| No. | Species Name | Scientific Name | RDi | Status | Remarks                  |
|-----|--------------|-----------------|-----|--------|--------------------------|
| 21. | Common Moorhen | Gallinula chloropus (Linnaeus, 1758) | R   | O C → | LC - IV | Eurasian Moorhen, Indian Moorhen |
| 22. | White-breasted Waterhen | Amaurornis phoenicurus (Pennant, 1769) | R   | O C ? | LC - IV | - |
| 23. | Common Coot | Fulica atra Linnaeus, 1758 | WM  | O A ↑ | LC - IV | Eurasian Coot |
| 24. | Purple Swamphen | Porphyrio porphyrio (Linnaeus, 1758) | R   | O R ? | LC - IV | Purple Moorhen |

### 7. PELECANIFORMES (No. of Species = 12 and No. of Families = 2)

#### 7.1. Ardeidae (9), RDi value - 3.51

| No. | Species Name | Scientific Name | RDi | Status | Remarks                  |
|-----|--------------|-----------------|-----|--------|--------------------------|
| 25. | Cattle Egret | Bubulcus ibis (Linnaeus, 1758) | R   | C A ↑ | LC - IV | - |
| 26. | Great Egret | Ardea alba Linnaeus, 1758 | R   | C FC ? | LC - IV | Large Egret |
| 27. | Intermediate Egret | Ardea intermedia Wagler, 1829 | R   | C FC ↓ | LC - IV | Median Egret, Smaller Egret |
| 28. | Little Egret | Egretta garzetta (Linnaeus, 1766) | R   | C A ↑ | LC - IV | - |
| 29. | Indian Pond Heron | Ardeola grayii (Sykes, 1832) | R   | C A ? | LC - IV | Paddybird |
| 30. | Purple Heron | Ardea purpurea Linnaeus, 1766 | R   | C R ↓ | LC - IV | - |
| 31. | Grey Heron | Ardea cinerea Linnaeus, 1758 | R   | C A ? | LC - IV | - |
| 32. | Green-backed Heron | Butorides striata (Linnaeus, 1758) | R   | C R ↓ | LC - IV | Little Green Heron |
| 33. | Black crowned Night Heron | Nycticorax nycticorax (Linnaeus, 1758) | R   | C R ↓ | LC - IV | - |

Contd…..
Table 1. Contd…..

7.2. Threskiornithidae (3), RDi value- 2.63

| No. | Species                                             | Family     | Order    | Common Name                          |
|-----|-----------------------------------------------------|------------|----------|--------------------------------------|
| 34. | Red-naped Ibis                                      | Threskiornis melanocephalus | Charadriiformes | Indian Black Ibis                     |
| 35. | Eurasian Spoonbill                                  | Platalea leucorodia | Charadriiformes | White Ibis, Oriental White Ibis       |
| 36. | Black-Headed Ibis                                   | Threskiornis melanocephalus | Charadriiformes | Indian Black Ibis                     |

8. CHARADRIIFORMES (No. of Species=17 and No. of Families=6)

8.1. Recurvirostridae (2), RDi value- 1.75

| No. | Species                                             | Family     | Order    | Common Name                          |
|-----|-----------------------------------------------------|------------|----------|--------------------------------------|
| 37. | Black-Winged Stilt                                  | Himantopus himantopus | Charadriiformes | Avocet                             |
| 38. | Pied Avocet                                         | Recurvirostra avosetta | Charadriiformes | Avocet                             |

8.2. Scolopacidae (11), RDi value- 9.65

| No. | Species                                             | Family     | Order    | Common Name                          |
|-----|-----------------------------------------------------|------------|----------|--------------------------------------|
| 39. | Common Sandpiper                                    | Actitis hypoleucus | Charadriiformes | Spotted Sandpiper                    |
| 40. | Wood Sandpiper                                       | Tringa glareola | Charadriiformes | White Ibis                          |
| 41. | Green Sandpiper                                      | Tringa ochropus | Charadriiformes | Common Greenshank                   |
| 42. | Common Redshank                                      | Tringa totanus | Charadriiformes | Dusky Redshank                      |
| 43. | Common Greenshank                                   | Tringa nebularia | Charadriiformes | Fantail Snipe                       |
| 44. | Ruff                                                | Calidris pugnax | Charadriiformes | Fantail Snipe                       |
| 45. | Marsh Sandpiper                                      | Tringa stagnatilis | Charadriiformes | Dusky Redshank                      |
| 46. | Spotted Redshank                                     | Tringa erythropus | Charadriiformes | Fantail Snipe                       |
| 47. | Common Snipe                                        | Gallinago gallinago | Charadriiformes | Fantail Snipe                       |
| 48. | Temminck's Stint                                    | Calidris temminckii | Charadriiformes | Fantail Snipe                       |
| 49. | Black-tailed Godwit                                  | Limosa limosa | Charadriiformes | Fantail Snipe                       |

8.3. Charadriidae (1), RDi value- 0.88

| No. | Species                                             | Family     | Order    | Common Name                          |
|-----|-----------------------------------------------------|------------|----------|--------------------------------------|
| 50. | Red-wattled Lapwing                                 | Vanellus indicus | Charadriiformes | Common Snipe                       |
| 51. | Whiskered Tern                                       | Chlidonias hybrida | Charadriiformes | Whiskered Tern                       |

8.4. Laridae (1), RDi value- 0.88

| No. | Species                                             | Family     | Order    | Common Name                          |
|-----|-----------------------------------------------------|------------|----------|--------------------------------------|
| 52. | Whiskered Tern                                       | Chlidonias hybrida | Charadriiformes | Whiskered Tern                       |
Table 1. Contd.....

8.5. Jacanidae (1), RDi value - 0.88
52. Pheasant-Tailed Jacana *Hydrophasianus chirurgus* (Scopoli, 1786) SM O R ↓ LC - IV -

8.6. Burhinidae (1), RDi value - 0.88
53. Indian Thick-Knee *Burhinus indicus* (Salvadori, 1865) R O R ↓ LC - IV -

9. ACCIPITRIFORMES (No. of Species=2 and No. of Family=1)
9.1. Accipitridae (2), RDi value - 1.75
54. Shikra *Accipiter badius* (J.F. Gmelin, 1788) R C R → LC II I -
55. Black Kite *Milvus migrans* (Boddaert, 1783) R C R ? LC II I Pariah Kite

10. STRIGIFORMES (No. of Species=1 and No. of Family=1)
10.1. Strigidae (1), RDi value - 0.88
56. Spotted Owlet *Athene brama* (Temminck, 1821) R C R → LC II IV -

11. BUCEROTIFORMES (No. of Species=2 and No. of Families=2)
11.1. Bucerotidae (1), RDi value - 0.88
57. Indian Grey Hornbill *Ocyceros birostris* (Scopoli, 1786) R O FC → LC - IV Common Grey Hornbill
11.2. Upupidae (1), RDi value - 0.88
58. Common Hoopoe *Upupa epops* Linnaeus, 1758 R In R ↓ LC - IV Eurasian Hoopoe

12. CORACIIFORMES (No. of Species=5 and No. of Families=3)
12.1. Meropidae (2), RDi value - 1.75
59. Green Bee-Eater *Merops orientalis* Latham, 1801 SM In A ↑ LC - IV Small Green Bee-Eater, Little Green Bee-Eater
60. Blue-Cheeked Bee-Eater *Merops persicus* Pallas, 1773 SM In R ↑ LC - IV -
12.2. Alcedinidae (2), RDi value - 1.75
61. White-Breasted Kingfisher *Halcyon smyrnensis* (Linnaeus,1758) R C C ↓ LC - IV White-throated Kingfisher
62. Pied Kingfisher *Ceryle rudis* (Linnaeus, 1758) R P R ? LC - IV Lesser Pied Kingfisher
12.3. Coraciidae (1), RDi value - 0.88
63. Indian Roller *Coracias benghalensis* (Linnaeus, 1758) R C R ↑ LC - IV -

13. PSITTACIFORMES (No. of Species=2 and No. of Family=1)
13.1. Psittaculidae (2), RDi value - 1.75
64. Rose-Ringed Parakeet *Psittacula krameri* (Scopoli, 1769) R F A ↑ LC - IV -
65. Alexandrine Parakeet *Psittacula eupatria* (Linnaeus, 1766) R F C ↓ NT II IV Large Indian Parakeet
| No. | Common Name                        | Scientific Name                          | R  | In  | C  | →  | LC | -  | IV | Species Status        |
|-----|-----------------------------------|------------------------------------------|----|-----|----|----|----|----|----|-----------------------|
| 66. | White-Browed Wagtail              | *Motacilla maderaspatensis* J.F. Gmelin, 1789 | R  | In  | C  | →  | LC | -  | IV | Large Pied Wagtail    |
| 67. | White Wagtail                     | *Motacilla alba* Linnaeus, 1758           | WM | In  | C  | →  | LC | -  | IV | Pied Wagtail           |
| 68. | Western Yellow Wagtail            | *Motacilla flava* Linnaeus, 1758          | WM | In  | C  | ↓  | LC | -  | IV | -                     |
| 69. | Grey Wagtail                      | *Motacilla cinerea* Tunstall, 1771        | WM | In  | R  | →  | LC | -  | IV | -                     |
| 70. | Streak-Throated Swallow           | *Petrochelidon fluvicola* Blyth, 1855     | R  | In  | C  | ↑  | LC | -  | IV | Indian Cliff Swallow  |
| 71. | Wire-Tailed Swallow               | *Hirundo smithii* Leach, 1818             | R  | In  | C  | ↑  | LC | -  | IV | -                     |
| 72. | Scaly-Breasted Munia              | *Lonchura punctulata* (Linnaeus, 1758)   | R  | G   | R  | →  | LC | -  | IV | Spotted Munia          |
| 73. | Indian Silverbill                 | *Eudocia malabarica* (Linnaeus, 1758)    | R  | G   | R  | →  | LC | -  | IV | White-throated Munia  |
| 74. | Jungle Babbler                    | *Turdoides striata* (Dumont, 1823)       | R  | O   | A  | →  | LC | -  | IV | -                     |
| 75. | Striated Babbler                  | *Argya earlei* (Blyth, 1844)              | R  | O   | R  | ↓  | LC | -  | IV | -                     |
| 76. | Indian Robin                      | *Saxicoides fulicatus* (Linnaeus, 1766)  | R  | In  | C  | →  | LC | -  | IV | Indian Black Robin    |
| 77. | Bluethroat                        | *Luscinia svecica* (Linnaeus, 1758)      | WM | In  | FC | →  | LC | -  | IV | -                     |
| 78. | Oriental Magpie Robin             | *Copsychus saularis* (Linnaeus, 1758)    | R  | In  | R  | →  | LC | -  | IV | -                     |
| 79. | Siberian Stonechat                | *Saxicola maurus* (Pallas, 1773)         | WM | In  | R  | →  | LC | -  | IV | Collared stonechat,   |
|     |                                   |                                          |    |     |    |    |    |    |    | Eastern Stonechat     |
| 80. | House Crow                        | *Corvus splendens* Vieillot, 1817         | R  | O   | C  | →  | LC | -  | V  | -                     |
| 81. | Rufous Treepie                    | *Dendrocitta vagabunda* (Latham, 1790)    | R  | O   | R  | ↓  | LC | -  | IV | Indian Treepie         |
| 82. | Lesser Whitethroat                | *Sylvia curruca* (Linnaeus, 1758)        | WM | O   | R  | →  | LC | -  | IV | -                     |
| 14.8. Laniidae (2), RDi value- 1.75 |
|-----------------------------------|
| 83. Bay Backed Shrike | *Lanius vittatus* | Valentien, 1826 | R | In | R | ← | LC | - | IV | - |
| 84. Long Tailed Shrike | *Lanius schach* | Linnaeus, 1758 | R | In | R | ? | LC | - | IV | Rufous-backed Shrike |

| 14.9. Cisticolidae (4), RDi value- 3.51 |
|---------------------------------------|
| 85. Plain Prinia | *Prinia inornata* | Sykes, 1832 | R | In | FC | ← | LC | - | IV | Plain Wren Warbler |
| 86. Common Tailorbird | *Orthotomus sutorius* | (Pennant, 1769) | R | In/N | R | ← | LC | - | IV | - |
| 87. Yellow-Bellied Prinia | *Prinia flaviventris* | (Delessert, 1840) | R | In | R | ↓ | LC | - | IV | Yellow-bellied Wren Warbler |
| 88. Ashy Prinia | *Prinia socialis* | Sykes, 1832 | R | In | R | ← | LC | - | IV | Ashy Wren Warbler |

| 14.10. Nectariniidae (1), RDi value- 0.88 |
|------------------------------------------|
| 89. Purple Sunbird | *Cinnyris asiaticus* | (Latham, 1790) | R | In/N | C | ← | LC | - | IV | - |

| 14.11. Zosteropidae (1), RDi value- 0.88 |
|----------------------------------------|
| 90. Indian White-Eye | *Zosterops palpebrosus* | (Temminck, 1824) | R | In/N | R | ↓ | LC | - | IV | - |

| 14.12. Pycnonotidae (2), RDi value- 1.75 |
|----------------------------------------|
| 91. Red Vented Bulbul | *Pycnonotus cafer* | (Linnaeus, 1766) | R | O | C | ↑ | LC | - | IV | - |
| 92. White-Eared Bulbul | *Pycnonotus leucotis* | (Gould, 1836) | R | O | R | ↓ | LC | - | IV | - |

| 14.13. Passeridae (2), RDi value- 1.75 |
|-----------------------------|
| 93. House Sparrow | *Passer domesticus* | (Linnaeus, 1758) | R | O | FC | ↓ | LC | - | IV | - |
| 94. Sind Sparrow | *Passer pyrhonotus* | Blyth, 1845 | R | O | R | ← | LC | - | IV | Sind Jungle Sparrow |

| 14.14. Sturnidae (6), RDi value- 5.26 |
|-------------------------------------|
| 95. Common Starling | *Sturnus vulgaris* | Linnaeus, 1758 | WM | O | R | ↓ | LC | - | IV | European Starling |
| 96. Brahminy Starling | *Stumia pagodarum* | (J.F. Gmelin, 1789) | R | O | R | ? | LC | - | IV | Black-headed Munia, Brahminy Munia |
| 97. Asian Pied Starling | *Gracupica contra* | (Linnaeus, 1758) | R | O | R | ↑ | LC | - | IV | Pied Myna |
| 98. Rosy Starling | *Pastor roseus* | (Linnaeus, 1758) | WM | O | R | ? | LC | - | IV | Rosy Pastor |
| 99. Common Myna | *Acridotheres tristis* | (Linnaeus, 1766) | R | O | FC | ↑ | LC | - | IV | Indian Myna |
| 100. Bank Myna | *Acridotheres ginzinianus* | (Latham, 1790) | R | O | R | ↑ | LC | - | IV | - |

| 14.15. Dicruridae (1), RDi value- 0.88 |
|----------------------------|
| 101. Black Drongo | *Dicrurus macrocercus* | Vieillot, 1817 | R | In | C | ? | LC | - | IV | - |
| 14.16. Phylloscopidae (1), RDi value - 0.88 |
|------------------------------------------|
| 102. Common Chiffchaff                    |
| *Phylloscopus collybita* (Vieillot, 1817) |
| WM In FC ↑ LC - IV -                     |

| 14.17. Ploceidae (1), RDi value - 0.88 |
|---------------------------------------|
| 103. Baya Weaver                      |
| *Ploceus philippinus* (Linnaeus, 1766) |
| R O R → LC - IV - Indian Baya         |

| 14.18. Peltorhynchidae (1), RDi value - 0.88 |
|----------------------------------------------|
| 104. Rufous-Vented Grass Babbler            |
| *Laticilla burnesii* (Blyth, 1844)          |
| R O R ↓ NT - IV -                           |

| 14.19. Oriolidae (1), RDi value - 0.88 |
|----------------------------------------|
| 105. Indian Golden Oriole              |
| *Oriolus kundoo* Sykes, 1932            |
| SM O FC ? LC - IV -                    |

| 14.20. Vangidae (1), RDi value - 0.88 |
|--------------------------------------|
| 106. Common Woodshrike                |
| *Tephrodornis pondicerianus* (J.F. Gmelin, 1789) |
| R In R → LC - IV -                    |

| 15. CICONIIFORMES (No. of Species=2 and No. of Family=1) |
|----------------------------------------------------------|
| 15.1. Ciconiidae (2), RDi value - 1.75 |
|----------------------------------------|
| 107. Asian Woollyneck                   |
| *Ciconia episcopus* (Boddaert, 1783)    |
| R C FC ↓ VU - IV - Woolly-necked Stork, White-necked Stork |

| 15.2. Pitemis (1), RDi value - 1.75 |
|-------------------------------------|
| 108. Painted Stork                  |
| *Mycteria leucocephala* (Pennant, 1769) |
| R C R ↓ NT I IV -                  |

| 16. PICIFORMES (No. of Species=3 and No. of Families=2) |
|---------------------------------------------------------|
| 16.1. Megalaimidae (2), RDi value - 1.75 |
|----------------------------------------|
| 109. Coppersmith Barbet                |
| *Psilopogon haemacephalus* (Status Müller, 1776)  |
| R F R ↑ LC - IV - Crimson-breasted Barbet       |

| 110. Brown Headed Barbet               |
| *Psilopogon zeylanicus* (J.F. Gmelin, 1788) |
| R F R → LC - IV - Large Green Barbet      |

| 111. Eurasian Wryneck                  |
| *Jynx torquilla* Linnaeus, 1758         |
| WM In R ↓ LC - IV - Wryneck, Northern Wryneck |

| 17. PODICIPEDIFORMES (No. of Species=1 and No. of Family=1) |
|-------------------------------------------------------------|
| 17.1. Podicipedidae (1), RDi value - 0.88 |
|------------------------------------------|
| 112. Little Grebe                            |
| *Tachybaptus ruficollis* (Pallas, 1764)     |
| R C R ? LC - IV - Dabchick                  |

| 18. SULIFORMES (No. of Species=2 and No. of Family=1) |
|-------------------------------------------------------|
| 18.1. Phalacrocoracidae (2), RDi value - 1.75 |
|-----------------------------------------------|
| 113. Little Cormorant                          |
| *Microcarbo niger* (Vieillot, 1817)            |
| R C A ? LC - IV -                             |

| 114. Great Cormorant                          |
| *Phalacrocorax carbo* (Linnaeus, 1758)        |
| WM C R ↑ LC - IV - Large Cormorant            |

**RDi value:** Relative Diversity Index Value; **Residential status:** R- Resident, SM- Summer Migrant, WM- Winter Migrant; **Abundance status:** A- Abundant, C- Common, FC- Fairly Common, R- Rare; **Feeding guild:** In- Insectivore, O- Omnivore, C- Carnivore, H- Herbivore, P- Piscivore, G- Grainivore, In/N- Insects/Nectarivore, F- Frugivore; **Conservation Status:** IUCN- International Union for Conservation of Nature and Natural Resources, CITES- Convention on International Trade in Endangered Species of Wild Fauna and Flora, WPA- Wildlife Protection Act; NT-Near-threatened, LC-Least Concern, VU-Vulnerable, I- Schedule I of IWPA (highly preferred species), IV- Schedule IV of IWPA (moderately preferred species); **Population trends:** ↑- Increasing, ↓- Decreasing, →- Stable, ?- Unknown.
Kalesar National Park, Haryana (Rai et al., 2017b); Gibe Sheleko National Park, South-western Ethiopia (Desta et al., 2020); Sheikh Badin National Park, Khyber (Ullah et al., 2021), order Passeriformes was the most prevalent taxa of avifauna in different areas. Due to their ability to use a wide range of habitats and consume varied food items such as grains, nuts, floral buds, fruits, nectar and invertebrates, passerines species encompasses high diversity in an area (Beresford et al., 2005). Analysis of RDi (Relative diversity) results revealed Scolopacidae as a highly diverse family possessing 11 species and the greatest RDi value, i.e., 9.65, in contrast to other families. The presence of food in large quantities plays a crucial role in revealing the existence of specific species in an area. The result of feeding guild of observed species revealed Carnivores (35 species) as highly dominated guild followed by Insectivores (32 species); Omnivores (26 species); Grainivores (6 species); Herbivores (6 species); Frugivores (5 species); Insect/Nectarivores (3 species) and Piscivores (one species). The maximum number of carnivorous bird species represents that the lake provides enormous food assets in terms of amphibians, crustaceans, fishes, reptiles and another non-insect invertebrate as well as vertebrates species (Kumar and Gupta, 2013; Jamwal et al., 2017; Kumar and Sharma, 2018; Sohil and Sharma, 2020). Out of recorded 114 species, 76 species were Resident; 30 Winter migrants and 8 summer migrants (Table 1). Some of the migratory species were Eurasian wigeon Mareca Penelope; Marsh Sandpiper Tringa stagnatilis; Spotted Redshank Tringa erythropus; Common Snipe Gallinago gallinago; Rosy Starling Pastor roseus.; Black Tailed Godwit Limosa limosa; Grey Wagtail Motacilla cinerea; Lesser Whitethroat Sylvia curruca; Great Cormorant Phalacrocorax carbo; Common Hawk cuckoo Hierococcyx varius; Pheasant-tailed Jacana Hydrophasianus chirurgus. Earlier record in Ottu Lake, Sirsa, Haryana documented 64 migratory species constituting 57 winter migrants and 7 summer migrant (Goyal et al. 2014). Studies such as Rai et al. (2017a) on Basai wetland; Chopra et al. (2017) on Bhindarias bird sanctuary; Rai et al. (2019) on Basai wetland; Vishwakarma et al. (2020) on Kopra reservoir revealed the presence of a maximum number of migratory birds in winter season in accordance with other respective seasons. Kumar et al. (2016) also recorded highest number of winter migratory species from Rural ponds of Kurukshetra, Haryana, being the presence of their study site on Central Asian Flyway. Being located on CAF (Central Asian Flyway) selected study site Ottu Reservoir, Sirsa also serves as most preferred wintering area for migrant avifaunal diversity that breeds in Palaeartic region of biogeographic realms. On the basis of IUCN Red list Criteria, 107 species were observed as Least concern (LC); six were Near threatened (NT) and the single species as Vulnerable (VU). Species such as Black-Tailed Godwit Limosa limosa; Black-Headed Ibis Threskiornis melanocephalus; Alexandrine Parakeet Psittacula eupatria; Whiskered Tern Chlidonias hybrid; Rufous-Vented Grass-Babbler Laticilla burnesi; Painted Stork Mycteria leuco-
cephala were Near-Threatened (NT) whereas Asian Woollyneck Ciconia episcopus was Vulnerable (VU). Three species such as Shikra Accipiter badius, Black kite Milvus migrans and Eurasian Spoonbill Platalea leucorodia were documented under Schedule-I and the remaining 111 species under Schedule-IV of Wildlife Protection Act (IWPA,1972). Six species from the reported avian species fall under various categories of CITES (2012) presenting Appendix-II (i.e. includes five species) and Appendix-I (i.e. include single species), respectively. In the present study, Rufous-Vented Grass-Babbler Laticilla burnesii was also recorded by us during one year study period in the study area as well as by others in district sirsa claiming its last sighting in October 2003 (Prayag Arora-Desai, 2019). Data on the abundance status of reported (residential and migratory) species figured out that 16 species were abundant, 21 were common, 17 were fairly common and 60 were rare in the area. The abundance status of a species in a region is determined by the composition of the vegetation that forms a major component of the habitat (Block and Brennan, 1993). A comparison of residential status of observed species with abundance status revealed that of 76 resident species, 10 species were abundant, 16 commons, 9 fairly common and 41 rare; among 30 winter migrants: 4 species were abundant, 4 common, 7 fairly common and 15 rare and Of 8 Summer migrants: 2 species abundant, 1 common, 1 fairly common and 4 rare (Fig. 3). Depending on the abundance status, appropriate conservation planning is essential for maintaining these rare species’ diversity in the study area. The population trends consigned in accordance with IUCN Red List (IUCN, 2020) revealed that among recorded avian fauna, increasing trends were by 22 species; decreasing by 37 species; stable by 35 species and unknown by 20 species. A comparison between local abundance status and population trends (Fig. 4) described three species namely Rock dove Columba livia, Lesser Whistling-duck Dendrocygna javanica and Common Sandpiper Actitis hypoleucus with decreasing global population trends of IUCN, were present abundantly in the reservoir, due to presence of suitable food resources and appropriate environmental conditions. Similarly, analysis of global IUCN population trends with respect to the residential status of bird’s results out that among 76 residents species: 15 species shows increasing trend (↑), 23 species decreasing trend (↓), 24 species stable trend (→) and 14 species unknown trend (?); whereas of 30 winter migrants: 5 species with an increasing trend (↑), 12 species decreasing trend (↓), 8 species stable trend (→) and 5 species unknown trend (?) and of 8 summer migrants: 2 species shows increasing trend (↑), 2 species decreasing trend (↓), 3 species stable trend (→) and single species with unknown status (Fig. 5). Concerning conservation, species with decreasing IUCN population trends need to be prioritized for extensive monitoring and other threatened species. A proper management plan should be made at objective and secondary levels, emphasizing wetland protection and sustainable use, as the lake is home to a huge number of bird species.

Conclusion
The present study provides information about the ecological characteristics of Ottu reservoir, which serves as heaven for 114 avian species (18 orders, 47 families and 91 genera), sustaining serenity, contiguity of river, diverse habitat, vast aquatic area, agricultural fields, nutrient-rich water and other environmental conditions. Recorded data of 114 bird species at the reservoir can be used as baseline data for assessing future perspectives and proper management plans for wetland protection and its sustainable use. Long-term monitoring of avifaunal composition in this area will act as excellent means to determine the effects of anthropogenic pressures and implement conservation strategies of the Ottu reservoir, Sirsa (Haryana).

ACKNOWLEDGEMENTS
Our sincere thanks to the Department of Zoology, Kurukshetra University, Kurukshetra, for providing the requisite facilities. We are thankful to the CSIR for awarding the JRF Fellowship for this research.

Conflict of interest
The authors declare that they have no conflict of interest.

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