The Pharma Innovation Journal 2022; SP-11(8): 806-812

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(8): 806-812

www.thepharmajournal.com
Received: 07-05-2022
Accepted: 12-06-2022

Priya
Department of Zoology & Aquaculture, CCS Haryana Agricultural University, Hisar, Haryana, India

Dahrambir Singh
Department of Zoology & Aquaculture, CCS Haryana Agricultural University, Hisar, Haryana, India

Vikram Delu
Technical Expert-Zoology, HSBB, Panchkula, Haryana, India

Kiran Yodha
Department of Zoology & Aquaculture, CCS Haryana Agricultural University, Hisar, Haryana, India

Corresponding Author
Priya
Department of Zoology & Aquaculture, CCS Haryana Agricultural University, Hisar, Haryana, India

Status of winter migratory and resident avifauna at Sultanpur national park, Gurugram

Priya, Dahrambir Singh, Vikram Delu and Kiran Yodha

Abstract
Wetlands are very crucial and vital in providing breeding and feeding grounds to the migratory birds. A comparative study on avian diversity of winter migratory and resident birds was conducted at Sultanpur National Park from October, 2019 to March, 2020 during which 96 species belonging to 17 orders, 35 families and 75 genera were identified categorized as winter migratory (34) and resident (62). Among the winter migratory species, order Anseriformes and family Anatidae were most prevalent whereas order Passeriformes and family Ardeidae were dominant among the resident avifauna. One winter migratory (*Ciconia episcopus*) and four resident species (*Anhinga melanogaster*, *Mycteria leucocephala*, *Paleornis eupatria* and *Threskiornis melanocephalus*) are listed as near threatened whereas one winter migrant (*Aythya ferina)* is categorized as vulnerable. Management strategies and planning are important factors responsible for conservation of these important avian habitats and hence for their conservation.

Keywords: Resident, Sultanpur, threatened, wetlands, winter migratory

Introduction
Wetlands are the water lodged bodies which plays an important role in providing habitat and resources necessary for avian survival. They provide breeding, feeding, nesting and roosting grounds to the birds and their young ones [9]. Hence, as a conservation strategy a significant number of wetlands including Sultanpur National Park has been declared as protected areas (National parks; Wildlife sanctuaries or Important Bird Areas, IBAs) by Bird Life International. The state Haryana hosts five protected areas as IBAs including Sultanpur National Park, Basai Wetlands, Kalesar Wildlife Sanctuary, Bhindawas Wildlife Sanctuary and Wetlands of Yamuna River. More than 250 out of 1324 Indian bird species are water inhabiting but are under threat of extinction unfortunately due to habitat disturbance, destruction and fragmentation [3]. The water bodies attract several migratory birds by providing them breeding and feeding grounds during unfavorable environment at their native places or by acting as stop overs for long distance migrating birds. These migratory birds are very important and potential health indicator of any environment or area they inhabit [6]. Keeping the ecological importance of protected areas in avian conservation in view, the study was carried out at the Sultanpur National Park located in Gurugram, Haryana.

Materials and Methods
Sultanpur National Park located at 28°28 N latitude and 76°53 E longitudes in district Gurugram of the state Haryana was selected for the planned study. The park covers an area of approximately 13,727 hectares with a core area of 143 hectares with low lying marsh vegetation [5]. Periodic fortnightly visits were conducted from October 2019 (arrival time of winter migrants) to March 2022 (departure time of winter migrants) with the help of NIKON Binoculars and P900 digital camera. The survey was done during morning and evening hours preferably to record the species avoiding unusual weather days. The observed species were identified and classified in different orders, families, conservation status, local abundance and habitat preference using reference books [1, 4], online bird databases assisted by photographs and morphological features recorded during the visits. Line transects and point count methods [2, 8] were used for recording the diversity.

Results and Discussion
During the study, 34 migratory and 62 resident avian species (total 96 species belonging to 17 orders, 35 families and 75 genera) were spotted and identified at Sultanpur National Park. Checklists of the species based on their residential status along with their local abundance,

habitat preference, conservation status and global population trends are presented in Table 2 and Table 3. 34 migratory species represented 7 orders and 12 families whereas 62 residential species belongs to 16 orders and 30 families.

Figure 1 depicts that order Anseriformes (n=11; RDi=32.4) was most prevalent among the migratory avifauna followed by Passeriformes (n=10; RDi=29.4) and Charadriiformes (n=9; RDi=26.5) whereas order Passeriformes (n=25; RDi=40.3) was dominant followed by Pelecaniformes (n=12; RDi=19.4) among the resident birds. Family Anatidae dominated (n=11; RDi=32.4) the winter migratory avian diversity followed by Scolopacidae (n=6; RDi=17.6) and Motacillidae (n=5; RDi=14.7) while among the resident avifauna, family Ardeidae (n=8; RDi=12.9) was most prevalent followed by Motacillidae (n=6; RDi=9.7) as shown in Figure 2. The family Anatidae includes species *Spatula clypeata* (Linnaeus, 1758); *Anas acuta* (Linnaeus, 1758); *Aythya ferina* (Linnaeus, 1758), etc. Similar to our results, [7] reported 45 migratory species with family Anatidae being most dominant.

Results of investigation on abundance status, IUCN status and Global Population Trends with respect to residential distribution of avifauna are shown in Figures 3, 4, 5 and 6. 35 (36.4%) species {9 (25.7%) winter migratory and 26 (74.3%) resident} were reported as common, 34 (35.41%) species {15 (44.1%) winter migratory and 19 (55.9%) resident} were present very commonly and 28 (29.2%) species {2 (7.1%) winter migratory and 26 (92.9%) resident} were found abundant whereas 9 (25.7%) species {8 (88.9%) winter migratory and 1 (11.1%) resident} were present rarely (Fihure 3). Near threatened and vulnerable species were observed either very commonly or commonly (Figure 5) which indicates the suitability of habitat for the presence and conservation of endangered species. As far as IUCN status is concerned, 90 species belongs to least concern category with 21 having increasing, 35 with stable, 18 with decreasing and 16 have unknown population trends. Out of 32 winter migrant least concern; 10, 8, 8 and 6 have increasing, stable, decreasing and unknown population trends respectively whereas 11, 27, 10 and out of 58 residents shows increasing, stable, decreasing and unknown global population trends. Among the remaining six species; five are listed as near threatened (one winter migrant: *Ciconia episcopus* and 4 resident: *Anhinga melanogaster*, *Mycteria leucocephala*, *Paleornis eupatria* and *Threskiornis melanocephalus*) whereas one is categorized vulnerable (winter migrant: *Aythya ferina*) with decreasing populations (Figure 4 and Figure 6). The decreasing population trends of species are a great concern of ecologists and conservationists.

Figure 7 depicts the habitat preferences of species which revealed that 42 and 46 species preferring aquatic and terrestrial habitat whereas 8 preferred both aquatic as well as terrestrial. Out of 34 winter migrants; maximum 23 were found preferring aquatic whereas six and five species preferred terrestrial and both the habitats respectively. However, maximum (40 species out of 62) among the residents were observed as terrestrial whereas 19 and three species utilized aquatic and both the habitats respectively.

Table 1: Status of winter migratory avifauna at Sultanpur National Park

S. No.	Order (RDi)	Family (RDi)	Common name	Zoological name	Local abundance	Habitat preference	IUCN Status	Global Population trend
	Anseriformes	Anatidae	Common Teal	*Anas crecca*	A	A	LC	?
			Common Pochard	*Aythya ferina*	C	A	VU	▼
			Eurasian Wigeon	*Maraca penelope*	C	A	LC	▼
			Gadwall	*Mareca strepera*	VC	A	LC	▲
			Garganey	*Spatula querquedula*	VC	A	LC	▼
			Greylag Goose	*Anser anser*	VC	A	LC	▲
			Mallard	*Anas platyrhynchos*	VC	A	LC	▲
			Noerthern Pintail	*Anas acuta*	VC	A	LC	▼
			Northern Shoveler	*Spatula clypeata*	VC	A	LC	▼
			Ruddy Shelduck	*Tadornaferruginea*	VC	A	LC	?
			Tufted Pochard	*Aythya fuligula*	C	A	LC	►
	Charadriformes	Charadriidae	White Tailed Lapwing	*Vanellus leucurus*	C	A	LC	?
		Recurvirostridae	Black Winged Stilt	*Himantopus himantopus*	VC	A	LC	▲
			Pied Avocet	*Recurvirostra avosetta*	R	A	LC	?
		Scolopacidae	Common Greenshank	*Tringa nebularia*	R	A	LC	►
			Common Redshank	*Tringa totanus*	R	A	LC	?
			Common Sandpiper	*Actitis hypoleucos*	R	A	LC	▼
			Common snipe	*Gallinago gallinago*	R	A	LC	▼
			Little Stint	*Calidris minuta*	R	A	LC	▲
			Wood Sandpiper	*Tringa glareola*	R	A	LC	►
	Ciconiiformes	Ciconiidae	Wolly-necked stork	*Ciconia episcopus*	C	A	NT	▼
	Falconiformes	Falconidae	Common Kestrel	*Falco tinnuculus*	R	T	LC	▼
	Gruiformes	Rallidae	Common Coot	*Fulica atra*	A	A	LC	▲
	Passeriformes	Laniidae	Isabelline Shrike	*Lanius isabellinus*	C	T	LC	►
		Motacillidae	Citrine Wagtail	*Motacilla citreola*	VC	B	LC	▲

			Long Billed Pipit	*Acanthus similis*	VC	B	LC	►
			Water pipit	*Anthus spinoletta*	VC	B	LC	►
			White Wagtail	*Motacilla alba*	VC	B	LC	►
			Yellow Wagtail	*Motacilla flava*	VC	B	LC	▼
		Muscicapidae	Black Redstart	*Phoenicurus ochruros*	VC	T	LC	▲
			Bluethroat	*Cyanecula svecica*	VC	T	LC	►
			Red Breasted Flycatcher	*Ficedula parva*	C	T	LC	▲
		Phylloscopidae	Common Chiffchaff	*Phylloscopus collybita*	C	T	LC	▲
	Suliformes	Anhingidae	Indian Cormorant	*Phalacrocorax fuscicollis*	C	A	LC	**?**

A-Abundant; VC-Very Common; C-Common; R-Rare
Aq-Aquatic; T-Terrestrial; B-Both
LC-Least Concern; VU-Vulnerable; NT-Near Threatened
▲-Increasing; ▼-Decreasig; ►-Stable?-Unknown

Table 2: Resident avifauna at Sultanpur National Park

S. No.	Order (RDi)	Family (RDi)	Common name	Zoological name	Local abundance	Habitat preference	IUCN Status	Global Population trend
	Accipitriformes	Accipitridae	Black Kite	*Milvus migrans*	VC	T	LC	►
			Shikra	*Accipiter badius*	C	T	LC	►
	Anseriformes	Anatidae	Spot Billed Duck	*Anas poecilorhyncha*	A	A	LC	▼
	Charadriformes	Charadriidae	Red Wattled Lapwing	*Vanellus indicus*	A	B	LC	**?**
	Ciconiiformes	Ciconiidae	Painted Stork	*Mycteria leucocephala*	C	A	NT	▼
	Columbiformes	Columbidae	Blue Rock Pigeon	*Columba livia*	A	T	LC	▼
			Eurasian Collared Dove	*Streptopelia decaocta*	A	T	LC	▲
			Laughing Dove	*Spilopelia senegalensis*	A	T	LC	►
	Coraciiformes	Coraciidae	Indian Roller	*Coracias benghalensis*	VC	T	LC	▲
		Alcedinidae	White Breasted Kingfisher	*Halcyon gularis*	A	T	LC	▲
	Cuculiformes	Cuculidae	Asian Koel	*Eudynamys scolopaceus*	C	T	LC	►
			Greater Coucal	*Centropus sinensis*	C	T	LC	►
	Galliformes	Phasianidae	Grey Francolin	*Francolinus pondicerianus*	C	T	LC	►
			Indian Peafowl	*Pavo cristatus*	VC	T	LC	►
	Gruiformes	Rallidae	Common Moorhen	*Gallinula chloropus*	A	A	LC	►
			Purple Swamphen	*Porphyrio porphyrio*	A	A	LC	**?**
			White Breasted Waterhen	*Amaurornis phoenicurus*	A	A	LC	**?**
	Passeriformes	Alaudidae	Crested Lark	*Galerida cristata*	C	T	LC	▼
		Cisticolidae	Ashy Prinia	*Prinia socialis*	C	T	LC	►
			Graceful Prinia	*Prinia gracilis*	C	T	LC	►
			Plain Prinia	*Prinia inornata*	C	T	LC	►
		Corvidae	House Crow	*Corvus splendens*	A	T	LC	►
		Dicruridae	Black Drongo	*Dicrurus macrocercus*	A	T	LC	**?**
		Estrildidae	Indian Silverbill	*Euodice malabarica*	A	T	LC	►
			Scaly Breasted Munia	*Lonchura punctulata*	C	T	LC	►
		Laniidae	Bay Backed Shrike	*Lanius vittatus*	C	T	LC	►
		Leiothrichidae	Common Babbler	*Argya caudate*	A	T	LC	►
			Jungle Babbler	*Argya striata*	A	T	LC	►
			Large Grey Babbler	*Argya malcolini*	VC	T	LC	►
		Motacillidae	Paddyfield Pipit	*Anthus rufulus*	VC	B	LC	►
			White Browed Wagtail	*Motacilla maderaspatensis*	VC	B	LC	►
			Brown Rockchat	*Oenanthe fusca*	VC	T	LC	►
			Indian Robin	*Saxicoloides fulicatus*	VC	T	LC	►
			Oriental Magpie Robin	*Copsychus saularis*	VC	T	LC	►
			Pied Bushchat	*Saxicola caprata*	VC	T	LC	►
		Nectariniidae	Purple Sunbird	*Cinnyris asiaticus*	VC	T	LC	►
		Passeridae	House Sparrow	*Passer domesticus*	VC	T	LC	▼
		Plocidae	Baya Weaver	*Ploceus philippinus*	C	T	LC	►

		Pycnonotidae	Red Vented Bulbul	*Pycnonotus cafer*	A	T	LC	▲
		Sturnidae	Asian Pied Starling	*Gracupica contra*	A	T	LC	▲
			Brahminy Starling	*Sturnidia pagodarum*	A	T	LC	?
			Common Myna	*Acridotheres tristis*	A	T	LC	▲
	Pelecaniformes	Ardeidae	Black-crowned Night-heron	*Nycticorax nycticorax*	R	A	LC	▼
			Cattle Egret	*Bubulcus ibis*	A	A	LC	▲
			Great White Egret	*Ardea alba*	C	A	LC	?
			Grey Heron	*Ardea cinerea*	VC	A	LC	?
			Indian Pond Heron	*Ardeola grayii*	A	A	LC	?
			Intermediate Egret	*Ardea intermedia*	VC	A	LC	▼
			Little Egret	*Egretta garzetta*	VC	A	LC	▲
			Purple Heron	*Ardea pupurea*	A	A	LC	▼
		Threskiornithidae	Eurasian spoonbill	*Platalea leucorodia*	A	A	LC	?
			Red Naped Ibis	*Pseudibis papillosa*	A	A	LC	▼
			Black Headed Ibis	*Threskiornis melanocephalus*	VC	A	NT	▼
			Glossy Ibis	*Plegadis falcinellus*	VC	A	LC	▲
	Piciformes	Megalaimidae	Brown Headed Barbet	*Psilopogon zeylanicus*	C	T	LC	►
			Coppersmith Barbet	*Psilopogon haemacephalus*	C	T	LC	▲
	Podicipediformes	Podicipedidae	Little Grebe	*Tachybaptus ruficollis*	VC	T	LC	▼
	Psittaciformes	Psittacidae	Rose-ringed Parakeet	*Alexandrines krameri*	A	T	LC	▲
			Alexandrine Parakeet	*Paleornis eupatria*	VC	T	NT	▼
	Suliformes	Anhingidae	Oriental Darter	*Anhinga melanogaster*	VC	A	NT	▼
			Little Cormorant	*Microcarbo niger*	A	A	LC	?
	Upupiformes	Upupidae	Common Hoopoe	*Upupa epops*	A	T	LC	▼

A-Abundant; VC-Very Common; C-Common; R-Rare
Aq-Aquatic; T-Terrestrial; B-Both
LC-Least Concern; NT-Near Threatened
▲-Increasing; ▼-Decreasig; ►-Stable?-Unknown

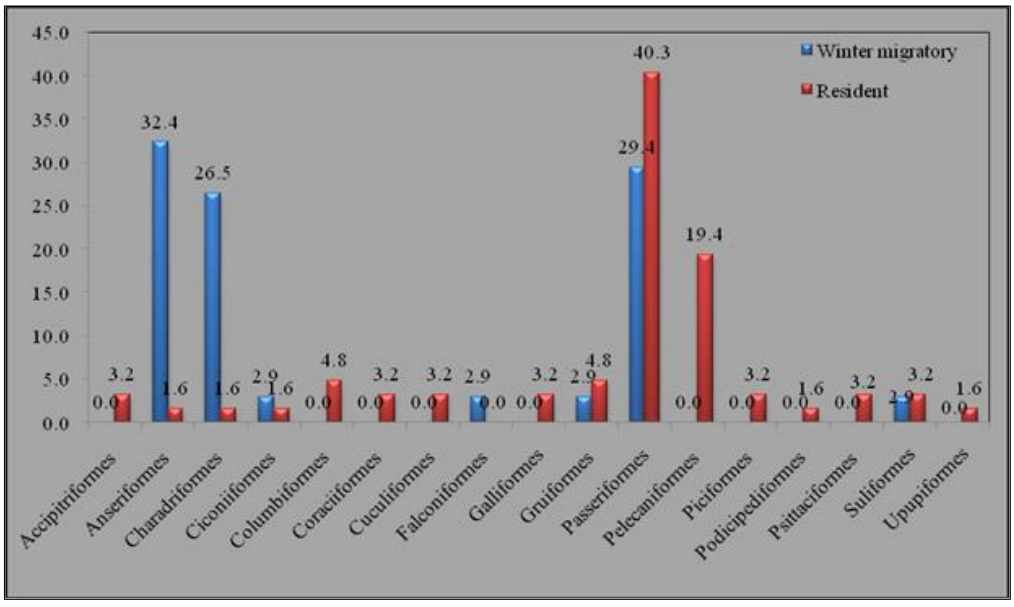

Fig 1: Order wise species distribution of migratory and resident avian fauna

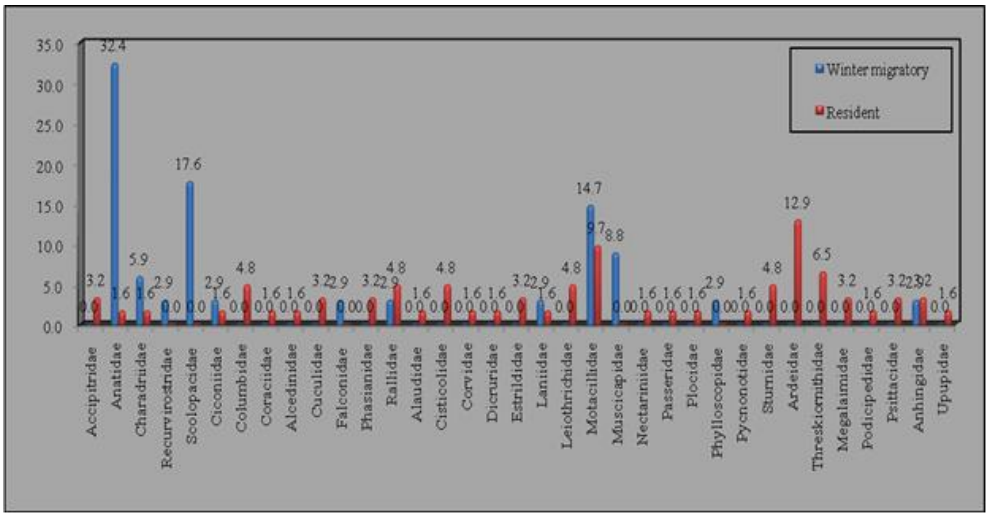

Fig 2: Family wise species distribution of migratory and resident avian fauna

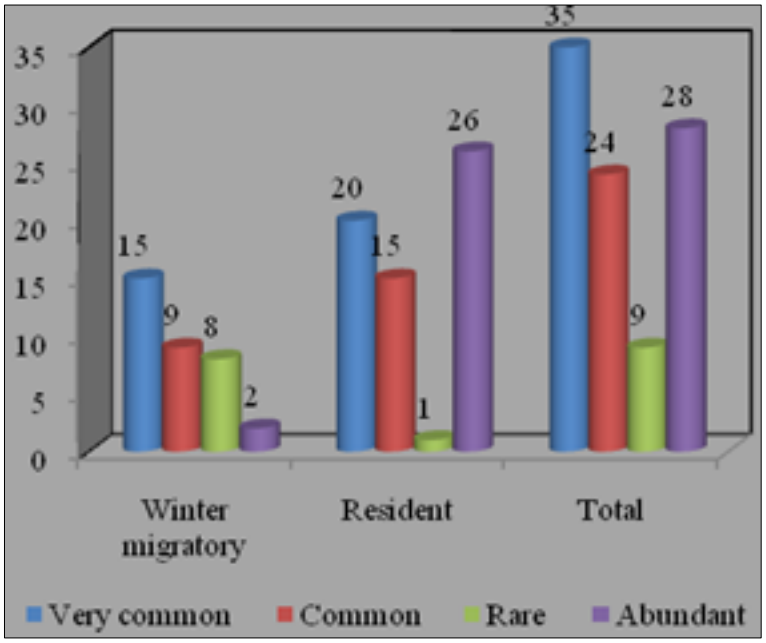

Fig 3: Abundance status of winter migratory and resident bird species

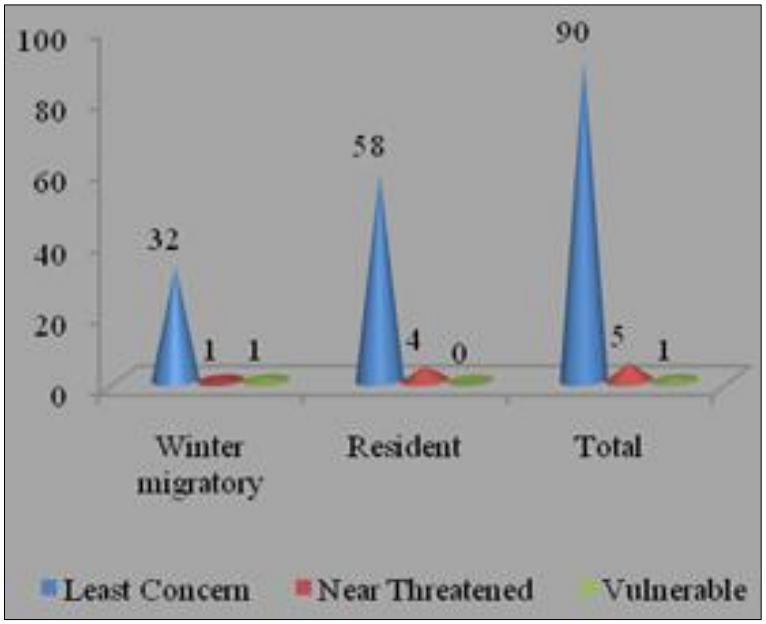

Fig 4: Relationship between distribution and IUCN status of bird species

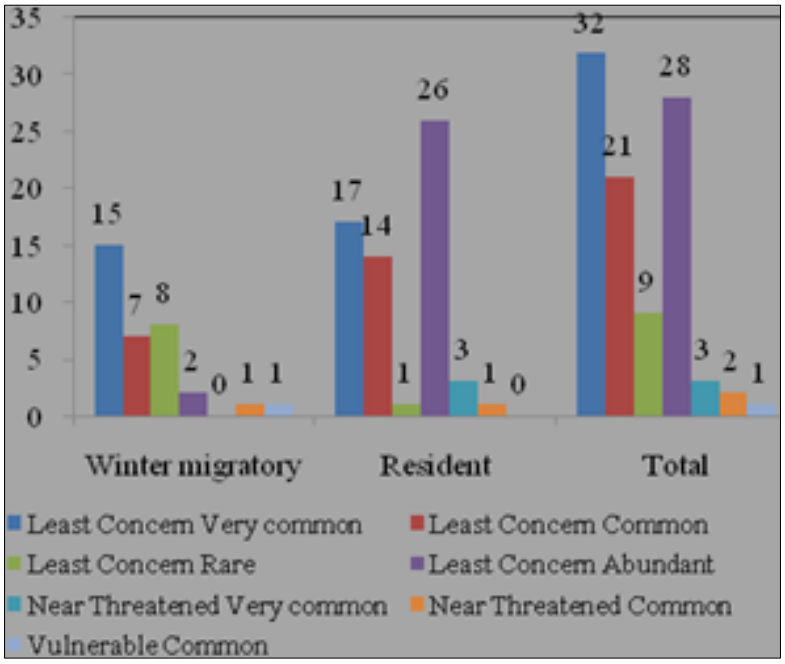

Fig 5: Relationship between IUCN and abundance status of winter migratory and resident bird species

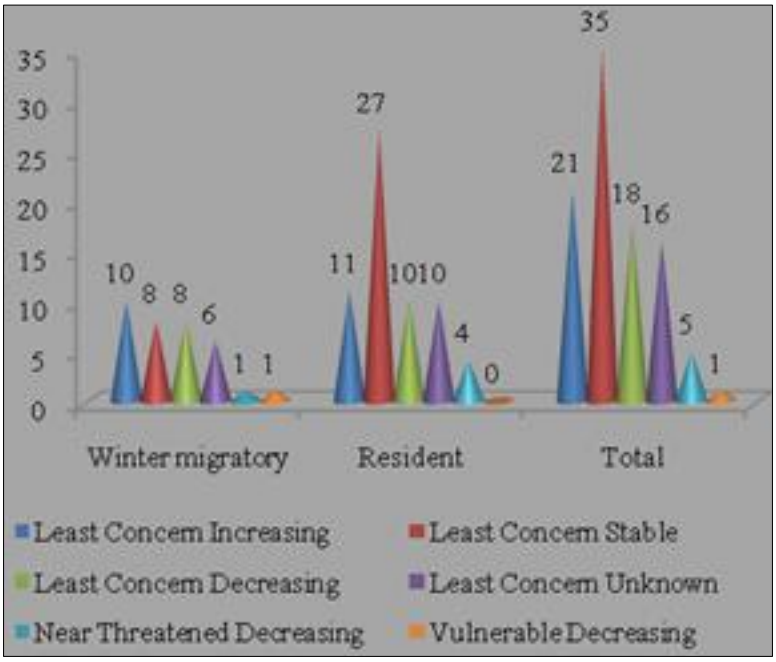

Fig 6: Distribution (winter migratory/resident) wise IUCN status and Global Population Trends of bird species

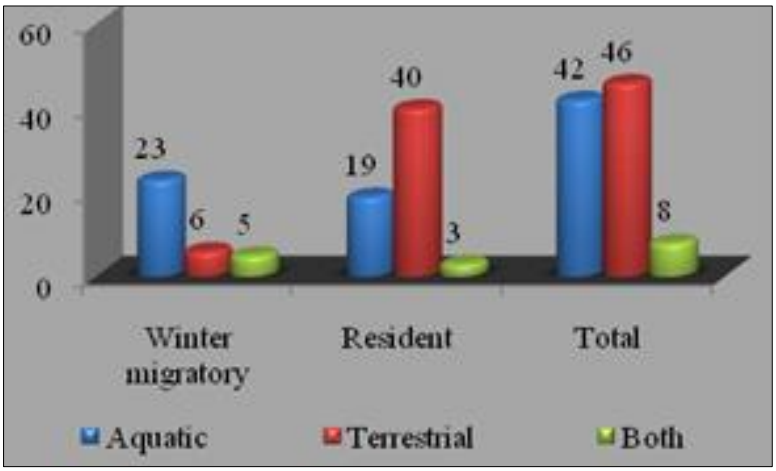

Fig 7: Habitat wise distribution of winter migratory and resident avifauna

Acknowledgement
The authors are highly thankful to Vice-Chancellor, CCSHAU and HOD, Department of Zoology & Aquaculture for providing research facilities for the work to carry out. Our obliged thanks are also extended to CSIR for providing financial assistance.

Conflict of interest
The authors declare no conflict of interest.

References
1. Ali S, Ripley SD. Compact handbook of the birds of India and Pakistan. Delhi: Oxford University Press, 1987.
2. Blondel J, Ferry C, Frochot B. Point counts with unlimited distance. Stud. Avian Biol. 1981;6:414-420.
3. Gopi GV, Hussain SA. (Eds.) Waterbirds of India, ENVIS Bulletin: Wildlife and Protected Areas. Wildlife Institute of India, Dehradun, India. 2014;16:368.
4. Grimmett R, Inskipp C, Inskipp T. Birds of Indian Subcontinent, 2nd Ed, Oxford University Press, India, 2015.
5. Islam MZ, Rahmani AR. Important Bird Areas in India: priority sites for conservation. Indian Bird Conservation Network, Bombay Natural History Society (India) and Bird Life International (UK), 2004.
6. Malik DS, Joshi N. Habitat selection pattern of migratory avifauna in relation to Nutrients in Asan Wetland at Doon Valley (Garhwali Himalaya), India. International Journal of Recent Scientific Research. 2013;4(10):1470-1475.
7. Rai D, Chopra G, Gulia R. Status of migratory avifaunal diversity of Basai wetland, Haryana (India). J Exp. Zool. India, 2017, 20(2).
8. Sale JB, Berkmuller K. Manual of wildlife techniques for Indian field documents no. 11. Wildlife Institute of India, Dehradun, 1988.
9. Stewart RE Jr. Technical Aspects of wetland: Wetlands as Bird Habitats. National Water Summary on Wetland Resources, United States Geological Survey Water Supply Paper, 2001, 2425.