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Original Research Paper

Avian Diversity: Environmental Health Index of Kurukshetra University

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ABSTRACT

A three year study on avian diversity and environmental health index was conducted in Kurukshetra University campus. The topography, flora and bird fauna was observed during the study period. University campus embodies diverse types of habitats including forest area, crop land, orchid, garden, marsh areas, urban and rural habitat with 40 acres of land as natural forest having endemic plants and tall trees. Total 72 bird species reported from campus belong to 14 different orders and 41 families. The bird fauna observed includes, Myna, Sparrow, Crow, Robin, Drongo, Tailorbird, Babbler, Sunbird, Green Bee-eater, Wagtail, Bulbul, Munia, Chiffchaff, Baya Weaver, Woodpecker, Barbet, Dove, Green Pigeon, Parrot, Peafowl, Koel, Cuckoo, Hawk, Darter, Kingfisher, Hoopoe, Hornbill, Lapwing, Stone Curlew, Cattle Egret, Waterhen, Moorhen, Kite and Shikra etc. To conserve the rich avian fauna of the campus, specific habitats need to be protected and awareness drive signifying the importance of avian fauna should be launched.

INTRODUCTION

Kurukshetra University is located in district Kurukshetra in the State Haryana. The campus of Kurukshetra University has a rich flora and fauna. The climatic conditions show variability according to seasonal changes. The climate is very hot in summer and remarkably cold in winter, with atmospheric temperature varying from 45°C in summer and 20°C in winter. The campus is surrounded by various habitats like wetlands, ponds and agricultural fields. The variable climate conditions and different kinds of habitats provide a broad niche to avian fauna inhabiting in the campus.

Birds and their diversity constitute a main part of the natural environment and play a functional role as agents of food chain (Nason 1992). Birds are good environmental indicators revealing the state of the ecosystems. Birds are the most important indicator of environmental health index because they have highly specific habitat requirements and with alterations in the ecosystem balance they become threatened. Hence, the present study was conducted to obtain information on the presence of various bird species in Kurukshetra University campus.

MATERIALS AND METHODS

The study was conducted from July 2012 to July 2015 in the Kurukshetra University campus, Kurukshetra (29°6'N, 76°5'E). Some of the basic methods described by Bibby et al. (1992) were used in the present study. Regular surveys were made by walking on fixed routes through the study area. The birds were observed in the morning from 7.00 am to 10.00 am and in the evening from 4.00 pm to 6.00 pm. The bird species observed or heard were recorded. The 8×42 Olympus binocular was used to confirm the identification of the birds. Photographs were taken by a digital camera.

RESULTS AND DISCUSSION

The Kurukshetra University campus spread over 440 acres of land embodies diverse types of habitats including, natural jungle, crop land, orchid, garden, marsh area, wild bloom of ground cover, urban and rural habitat with endemic plants and tall trees, afforestation zone and varied natural habitat. The topography of the campus has grasses, plain lush green lawns, orchids, gardens of fruit trees, vegetable fields, cropland, bushes, canopy of endemic and exotic trees and 40 acres of land as natural forest. A canal flows through the heart of the campus. The green campus with flexible habitats provide a unique niche for bird species.

Total 72 bird species reported from campus belong to 14 different orders and 41 families. Various types of insectivorous (24), omnivorous (16), carnivorous (10), frugivorous (7), piscivorous (6), gramnivorous (4), larvivorous (2), algal feeding (1) and nectar feeding (1) birds were observed inhabiting the campus (Fig. 1).

The avian species were found to belong to different orders including, Piciformers (4), Columbiformes (6),

Table 1: List of birds recorded in Kurukshetra University Campus.

Order	Family	Binomial Name	Common Name	Feeding Habit
Piciformers	Picidae	*Dendrocopos mahrattensis*	Yellow Crowned Woodpecker	Insectivorous
		Dinopium benghalense	Lesser golden back	Insectivorous
	Megalaimidae	*Megalaima haemacephala*	Coppersmith barbet	Frugivorous
		Megalaima zeylanica	Brown headed Barbet	Frugivorous
Columbiformes	Columbidae	*Columba livia*	Rock Dove	Omnivorous
		Spilopelia chinensis	Spotted Dove	Frugivorous
		Streptopelia decaocto	Eurasian Collared Dove	Omnivorous
		Stigmatopelia senegalensis	Laughing Dove	Gramnivorous
		Streptopellia tranquebalica	Red Collered Dove	Gramnivorous
		Treron phoenicoptera	Yellow Footed Green Pigeon	Frugivorous
Psittaciformes	Psittaculidae	*Psittacula krameri*	Rose-Ringed Parakeet	Frugivorous
Galliformes	Phasianidae	*Pavo cristatus*	Peafowl	Omnivorous
		Phasianus colchicus	Jungle Patridge	Omnivorous
Cuculiformes	Cuculidae	*Eudynamys scolopaceus*	Asian Koel	Omnivorous
		Centropus sinensis	Greater Coucal	Frugivorous
		Clamator jacobinus	Pied Crested Cuckoo	Larvivorous
		Hierococcyx varius	Common Hawk Cuckoo	Insectivorous
Pelecaniformes	Phalacrocoracidae	*Microcarbo niger*	Little Cormorant	Piscivorous
		Phalacrocorax fuscicollis	Indian cormorant	Piscivorous
	Anhingidae	*Anhinga melanogaster*	Oriental Darter	Piscivorous
Coraciformes	Alcedinidae	*Halcyon smyrnensis*	White Breasted Kingfisher	Piscivorous
		Alcedo atthis	Common Kingfisher	Piscivorous
	Cerylidae	*Ceryle rudis*	Pied Kingfisher	Piscivorous
	Upupidae	*Upupa epops*	Common Hoopoe	Insectivorous
	Bucerotidae	*Ocyceros birostris*	Indian Grey Hornbill	Carnivorous
	Coraciidae	*Coracias benghalensis*	Indian Roller	Carnivorous
Charadriformes	Charadriidae	*Vanellus indicus*	Red Wattled Lapwing	Insectivorous
	Burhinidae	*Burhinus indicus*	Stone Curlew	Insectivorous
	Recurvirostridae	*Himantopus himantopus*	Black Winged Stilt	Carnivorous
Ciconiiformes	Ardeidae	*Bubulcus ibis*	Cattle Egret	Carnivorous
		Egretta garzetta	Little Egret	Carnivorous
		Mesophoyx intermedia	Median Egret	Carnivorous
		Ardeola grayii	Indian Pond Heron	Algal Feeder
Gruiformes	Rallidae	*Amaurornis phoenicurus*	White Breasted Waterhen	Larvivorous
Falconiformes	Accipitridae	*Milvus migrans*	Black Kite	Carnivorous
		Accipiter badius	Shikra	Carnivorous
Strigiformes	Strigidae	*Athene brama*	Spotted owlet	Carnivorous
Apodiformes	Apodidae	*Apus apus*	Common Swift	Carnivorous
Passeriformes	Sturnidae	*Acridotheres tristis*	Common Myna	Omnivorous
		Acridotheres ginginianus	Bank Myna	Omnivorous
		Gracupica contra	Pied Myna	Omnivorous
		Sturnia pagodarum	Brahminy Starling	Omnivorous
	Passeridae	*Passer domesticus*	House Sparrow	Omnivorous
	Corvidae	*Corvus splendens*	House Crow	Omnivorous
		Corvus macrorhynchos	Jungle Crow	Omnivorous
		Dendrocitta vagabunda	Rufous Treepie	Omnivorous
	Muscicapidae	*Saxicoloides fulicatus*	Indian Robin	Insectivorous
		Copsychus saularis	Oriental Magpie Robin	Insectivorous
	Dicruridae	*Dicrurus macrocercus*	Black Drongo	Insectivorous
	Cisticolidae	*Orthotomus sutorius*	Tailorbird	Insectivorous
		Prinia socilais	Ashy pirinia	Insectivorous
		Prinia gracialis	Graceful prinia	Insectivorous
		Prinia inornata	Plain Prinia	Insectivorous
	Leiothrichidae	*Turdoides striata*	Jungle Babbler	Omnivorous
		Turdoides caudata	Common Babbler	Omnivorous
	Nectariniidae	*Cinnyris asiaticus*	Purple Sunbird	Nectar Feeder
	Meropidae	*Merops orientalis*	Green Bee-eater	Insectivorous
	Motacillidae	*Motacilla alba*	White Wagtail	Insectivorous

Table cont....

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		Motacilla flava	Yellow Wagtail	Insectivorous
		Motacilla maderaspatensis	White browed wagtail	Insectivorous
	Sturnidae	*Sturnus vulgaris*	European Starling	Insectivorous
	Hirundinidae	*Hirundo smithii*	Wire-Tailed Swallow	Insectivorous
	Pycnonotidae	*Pycnonotus cafer*	Red-Vented Bulbul	Omnivorous
	Pnoepygidae	*Pnoepyga albiventer*	AshyWren-Babbler	Insectivorous
	Estrildidae	*Lonchura punctulata*	Scaly-Breasted Munia	Frugivorous
	Muscicapidae	*Saxicola caprata*	Pied Bushchat	Insectivorous
	Campepehagidae	*Pericrocotus divaricalus*	Ashy minivet	Insectivorous
	Alaudidae	*Mirafra erythroptera*	Indian bush lark	Gramnivorous
	Phylloscopidae	*Phylloscopus collybita*	Common Chiffchaff	Insectivorous
		Sylvia nana	Assian desert warbler	Insectivorous
		Cettia cettia	Cetti'swarbler	Insectivorous
	Ploceidae	*Ploceus philippinus*	Baya Weaver	Gramnivorous

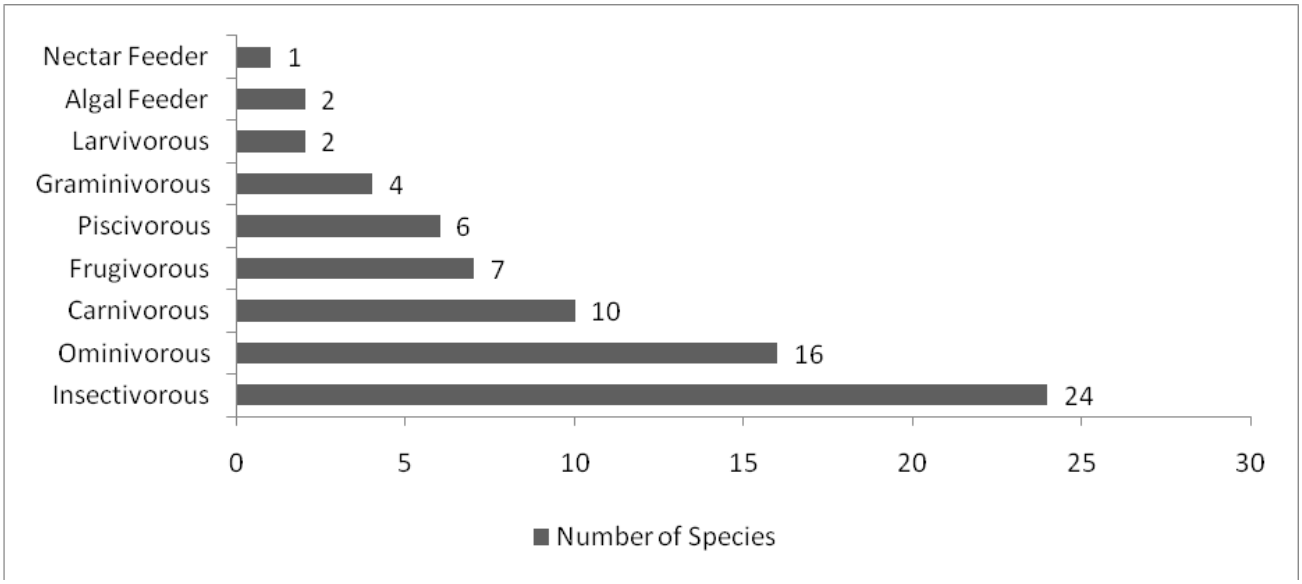

Fig. 1: Number of bird species with their feeding habits.

Psittaciformes (1), Galliformes (2), Cuculiformes (4), Pelecaniformes (3), Coraciformes (6), Charadriformes (3), Ciconiiformes (4), Gruiformes (1), Falconiformes (2), Strigiformes (1), Apodiformes (1), and Passeriformes (34) (Fig. 2).

The bird fauna observed in Kurukshetra University, campus includes Myna, Sparrow, Crow, Robin, Drongo, Tailorbird, Babbler, Sunbird, Green Bee-eater, Wagtail, Bulbul, Munia, Chiffchaff, Baya Weaver, Woodpecker, Barbet, Dove, Green Pigeon, Parrot, Peafowl, Koel, Cuckoo, Hawk, Darter, Kingfisher, Hoopoe, Hornbill, Lapwing, Stone Curlew, Cattle Egret, Waterhen, Moorhen, Kite and Shikra etc.

During the present study, total 72 bird species reported from campus belong to 14 different orders and 41 families which contradict with earlier studies in which 92 bird species belonging to 67 genera and 37 families were reported from Kurukshetra University campus (Gupta et al. 2009). The birds with different kind of feeding habits were reported during the present study, were consistent with the earlier studies (Gupta et al. 2009). Present work contradicts the earlier studies in which House Sparrow was not reported from the campus (Gupta et al. 2009).

Current results supports the previous studies that indicated that the number of carnivores and omnivorous birds are more in the University campus as compared to the frugivorous, piscivorous, larvivorous, algal feeding, gramnivorous and nectar feeding birds (Gupta et al. 2009).

CONCLUSION

Kurukshetra University campus possesses 72 bird species belonging to 14 different orders and 41 families. To con-

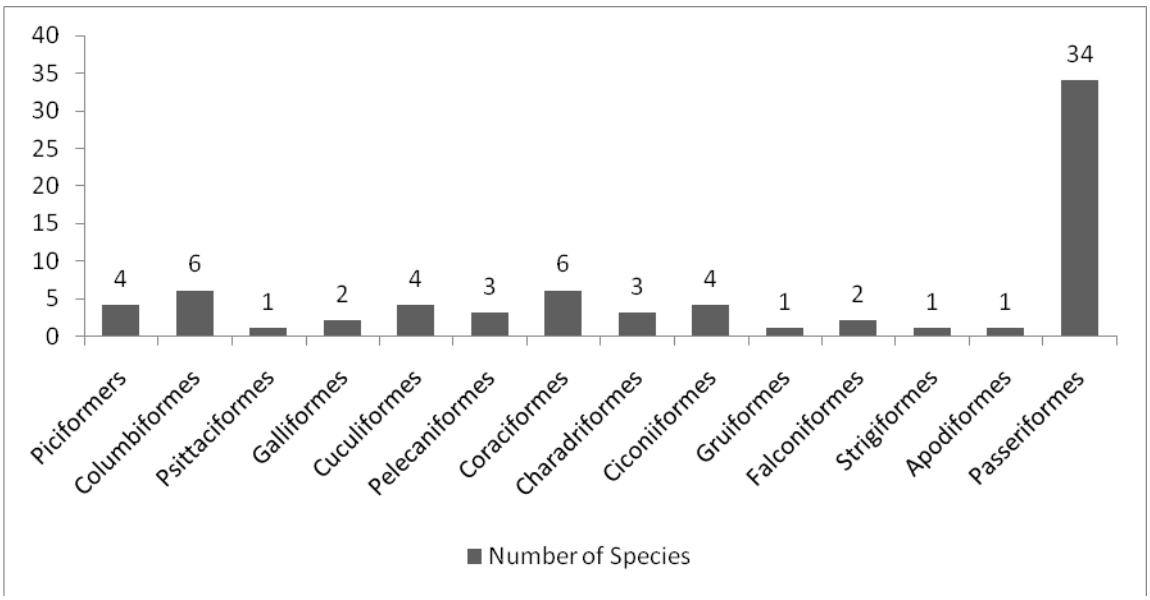

Fig. 2: Number of bird species in different Orders.

serve this rich avian fauna it is essential that more endemic vegetation should be planted. The water resources must not be disturbed and natural topography should be maintained. The tall and old trees are the nesting sites for birds, so they should be protected. Use of any type of pesticides should be avoided and people must be educated to love animals and birds in nature.

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