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AVIAN BIODIVERSITY AT SATPUDA BOTANICAL GARDEN, NAGPUR (M.S.): MILLENIUM URBANIZATION AND ASSSOCIATED CONSERVATION MANAGEMENT PRACTICES

D.R.Saxena^{1*}, **N.J.Tupkar²**, **R.A lonkar³**, and **F.A.Karim⁴** ¹Kamla Nehru mahavidyalaya, Nagpur (M.S.) India

*Corresponding author's Email: <u>saxenadevraj8465@gmail.com</u> ²Government Institute of Science, Nagpur (M.S.) India ³Sevadal Mahila Mahavidyalaya, Nagpur (M.S.) India ⁴PGTD, Campus, Nagpur (M.S.) India

ABSTRACT

In Nagpur city multitude of gardens, parks either isolated ones and others attached to various water bodies sustain avifauna diversity of local endemic and seasonal migratory birds. These bird-sites can be designated as "Avian- corridors" due to many reasons as these habitats allow birds to move freely to nearby forest areas of city. Hence, in the present field survey 50 avian species were recorded at Satpuda- Botanical Garden, Nagpur. These birds were assigned to guilds based on food consumed by them.

Keywords: Satpuda garden, Birds, Corridor, Biodiversity, Food, Conservation, Urbanization

INTRODUCTION

A great amount of literature exists on avian diversity work globally. Whelan et.al., (2008) and Malwa et.al.,(2012) mentioned roles of birds like seed dispersal, pollution and control of pest in forest and agriobiosecosystem; aves transfer matter and energy wherever they live (Lundberg and Moberg, 2003), restore by recollonising wastelands (Sekercioglu et.al., 2004; Sekercioglu 2006). Various field survey by avian researcher have reported 413 species in Vidarbha (M.S.). The present paper deals with biodiversity of birds in the Satpuda botanical garden and its surrounding areas, Vayusena-nagar road, Nagpur (M.S).

MATERIAL AND METHODS

From September 2018 to 2020 in morning and evening the Satpuda botanical garden and adjacent areas were visited mostly on holidays, Saturdays and Sundays to photograph birds, Canon EOS 1500 4DX Mark IV 30.4 Mp Digital SLR camera was used. Taxonomic classification and categorization of the observed avifauna was done using threaten scale into status based on IUCN Red list (Ali 1996; Grimmet and Inskipp, 2000).

Observation Table: Below are mentioned 50 species representing different families and belonging to granivorous, insectivorous, omnivorous, frugivorous, vermivorous, scavengers, and carnivorous, etc., Bird- guilds were recorded.

S.No	Scientific Name	Family	Food	Distribution	IUCN
		5			Status
1	Eudynamys Scolopaceus	Cuculidae	Ins,Frv	RD	LC
2	Cuculus Canorus	Cuculidae	Ins,Frv	MW	LC
3	Dinopium Benghalensis	Picidae	Ins,Frv	RD	LC
4	Columba livia	Columbidae	Grv, Ins	RD	LC
5	Amandava amandava	Estrildidae	Frv,Grv	RD	LC
6	Dendrocitta vagabunda	Corvidae	Ins,Car	RD	LC
7	Argya Striata	Leiothricidae	Ins.Car	RD	LC
8	Ocyceros birostris	Bucerotidae	Ins,Frv	RD	LC
9	Ictinaetus malayensis	Accipitridae	Car	VG	LC
10	Streptopelia	Columbidae	Grv,Frv	RD	LC
	senegalensis				
11	Halcyon smyrnensis	Alcedinidae	Car	RD	LC
12	Ninox scutulata	Strigidae	Ins,Car	RD	LC
13	Ardeola grayii	Ardeidae	Ins, Car	RD	LC
14	Acridotheres tristis	Sturnidae	Ins,Frv	RD	LC
15	Copsychus fulicatus	Muscicapidae	Ins,Car	RD	LC
16	Merops orientalis	Meropidae	Ins	RD	LC
17	Pastor roseus	Sturnidae	Ins,Frv	W-S	LC
18	orthotomus astrogularis	Cisticolidae	Ins	RD	LC
19	psittacula krameri	Psittaculidae	Frv,Grv	RD	LC
20	alcedo atthis	Alcedinidae	Car	RD	LC
21	Gracupia contra	sternidae	Ins, Frv	RD	LC
22	Coracias benghalensis	Coraciidae	Ins,Car RD		LC
23	Athene brama	Strigidae	Car,Ins	RD	LC
24	Accipiter badius	Accipitridae	Car RD		LC
25	Bubulcis ibis	Ardeidae	Ins,Car	RD	LC
26	Gallus sonneratti	Phasianidae	Omn	RD	LC
27	Columba palumbus	Columbidae	Grv,Ins	RD	LC
28	Oenanthe deserti	Muscicapidae	Ins,Car	WV	LC
29	Prinia socialis	Cisticolidae	Ins	RD	LC
30	Sturnia pagodarum	Sturnidae	Ins,Frv	RD	LC
31	Passer domesticus	Passeridae	Ins,Grv	RD	LC
32	Corvus splendens	Corvidae	Scv,Car	RD	LC
33	Dicrurus macrocercus	Dicruridae	Ins	RD	LC
34	Lanius schach	Laniidae	Ins,Car	RD	LC
35	Tersiphone paradisi	Monarchidae	Ins	RD	LC
36	Zoothera citrina	Turdidae	Ins,Car	RD	LC
37	Pitta brachyura	Pittidae	Ins	SM	LC
38	Vanellus indicus	Charadriidae	Ins,Car	RD	LC
39	Clamator jacobinus	lamator jacobinus Cuculidae		MV	LC

Observation Table 1: Avifauna diversity at Satpuda botanical garden Nagpur.

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40	Treron Phoenicopterus	Columbidae	Grv, Frv	RD	LC
41	Psittacula eupatoria	Psittaculidae	Frv, Grv	RD	NT
42	Ceryle rudis	Alcedinidae	Car	RD	LC
43	Tringa glareola	Scolopacidae	Car	MW	LC
44	Charadrus dubius	Chariidae	Ins, Car	RD	LC
45	Lonchura punctulata	Estriidae	Grv, Frv	RD	LC
46	<i>Lonchura malacca</i> Estridiae		Grv, Ins	RD	LC
47	Motacilla alba Motacillidae		Ins, Car	MW	LC
48	Ploceus phillipinus	ploceidae	Ins, Frv	RD	LC
49	Motacilla cinerea	Motacillidae	Ins, Car	MW	LC
50	Oriolus oriolus(Kundoo)	Oroilidae	Ins,Frv	RD	LC

Food: Granivores-Grv; Frugivores- Frv; Nectarivores- Nct; Foliores- Fol Grazer(Terrestrial)-Grz; Grazer (Aquatic) - Grz (Wt); Insectivores- Ins; Omnivores- Omn; Carnivores(minor)-Car(Mn); Carnivores(major)- Car(Mj); Scavenger- Scv.

Distribution:- S- W- Summer to Winter, M-S- Monsoon to Summer, VG- Vagrant, W-S- Winter to Summer, W-M- Winter tomonsoon, S-M- Summer to Monsoon, SV- Summer Vector, WV-winter visitor, MV- Monsoon Visitor.

IUCN Status:- Least concerned-LC; Near threatened:- NT; Vulnerable:- VU; Endangered:- EN; Critically endangered:- CR.

Ins, Frv	Ins, Car	Car	Frv, Grv	Grv,Frv	Sca,Car	Grv, Ins	Ins	Omn	Ins, Grv
22	30	12	6	6	2	6	12	2	2



IUCN avifauna status of Satpuda botanical garden, Nagpur.

RESULTS AND DISCUSSION

In the current investigation at Satpuda botanical garden and its surrounding about 50 avian species biodiversity was revealed. Birds were classified into families; depending on food types consumed they were assigned feeding guilds and were also categorized on threatened scale by employing IUCN Red list (Table No 1.). Insectivore - carnivore- 15, Insectivore- frugivore- 11, Carnivore- 6, Insectivore - 6, grainivore- insectivore- 3, grainivore- frugivore- 3 and frugivore – grainivore-3,Omnivore-1Scavenger-

carnivores-1, Insectivore– grainivore-1, avian food- guild were recorded in the investigation. Similarly resident- 41, winter to summer- 01, winter- visitor- 02 and vagrant- 01 avifauna species were categorized according to IUCN. Apart from arboreal birds, shore- birds, waterwaders, terrestrial birds enter the Satpudabotanical garden to rest, during daytime and retire in the evening.

Pachlore et. al., (2011) recorded 97 avifauna species from 3-wetlands of Amravati, 66 were local, 20 were resident and 12 were migrants. Patil and Tijare 82 bird reported bird species in 2012, in the vicinity of Gorewada lake, Nagpur. More species visited the area in monsoon and winter due to availability of food. Same author recorded 72 bird species in 2013 from Borgaon, Gorewada. Kedar (2012) recorded 135 species of avifauna in and around Ambazari lake. Out of this 105 species belonging to resident, 17 species were resident - migrant and 13 were winter migrant categories respectively. Chinckhede et.al., (2013) counted 120 bird species at Navegaon National Park(M.S.), However Wanjari et al., (2013) from Tipleshwar wildlife Sanctuary

(M.S.) described 158 bird species belonging to 58 families.

A. N. Sheikh, A.P. Meshram, N. J.Tupkar, D.R.Saxena(2021), studied biodiversity of Telangkhedi wetland ecosystem located in Nagpur and gave an account of this lake ecology that supports 79 species of inveterbrates and veterbrates. Sixteen species of avifauna were observed; other animals 13 species arthropods, 4 genera of mollusc, etc, serves as members at various trophic levels in food chain and food- web during the various seasons of the year in transferring matter and energy for smooth functioning in the sustenance dynamics of the ecosystem in general, otherwise if not specific. In another report work carried out D.R.Saxena et. al., (2021) reported from Nari and Pilinadi- area, of Nagpur 27-avian species.

According to D.R.Saxena et. al., (2022) the variability in number of avian species reported by many researches may be due to human activities and intervention of habitat. fragmentation of habitat, sound pollution, natural resource pollution lack of privacy, dumping garbage and industrial waste, agrobiosystem occupancy by farmers of forest lands, conversion of agricultural land to alteration of climate - weather conditions. torrential abnormal rainy season, severe heat wave and cold- wave during remaining parts of the year in India and globally, uncertainty of preferred- palatable food availability (scarcity), availability of right amount of food, quality- food, disrupted ecosystem, disturbed food- chains and food-webs of forest, agriobiose and aquatic systems system (wetlands). The greatest impact can be co related to urbanization in Nagpur city that affected speciesrichness. abundance. population, breeding- shelter- feeding grounds, etc.(D.R. Saxena et. al., 2022)

Following conservation management practices must be stringently implemented:

- (a) Control of pollution of air, water soil, forest and agricultural areas.
- (b) Plantation of trees to fix- carbon dioxide from atmosphere.
- (c) Reduce use of fossil-fuels.
- (d) Use sustainable, cheap, easily available green technology in day to day life.
- (e) Use cropping pattern- methods that conserve soil water, nutrient dynamics, micro flora- fauna and prevent global warming.
- (f) Prevent alterations in food- chain and food web.
- (g) Establish natural in- situ and ex-situ captive breeding areas to promote increase in bird population, because birds shuttle matter- energy by virtue of flight adaptation (Lundberg and Moberg, 2003), aid in pollination and seed dispersal and check insect- pest menace in forest and agriculture ecosystems (Mulwa et.al., 2012).
- (h) In Nagpur city Nag- nullah, gardens, parks, garbage- dumping sites, waste- lands with water-hole serve to support populations of avifauna. These sites can be called "Avain corridor." This concept is put forward by D.R.Saxena (personal observation, 2007-22). The Nag-nullah mostly provide worms, insects, molluscs, etc., as food to Bubulcis ibis(cattle egret), Egrettaegretta (little egret), and Mesophoyx intermedia (Intermediata egret). This is evident in winter and summer when parts of the drains become dry and parts where water becomes stagnant or slow- flowing streams. Colonies of egrets and other wetland birds have been observed on trees near the drain (D.R. Saxena).



1. Eudynamys scolopaceous 2. Cuculus canorus 3. Dinopium benghalensis



4.Columba livia 5. Amandava amandava 6. Dendrocitta vagabunda



7. Argya striata 8. Ocyceros birostris 9. Ictinaetus malayensis



10. Streptopelia senegalensis 11. Halcycon smyrnensis 12. Ninox scutulata



13. Ardeola grayii 14. Acridotheres tristis 15. Copsychus fulicatus



16. Merops orientalis 17. Pastor roseus 18. Orthotomous astrogularis



19. Psittacula krameri 20. Alcedo atthis 21. Gracupia contra



22.Coracias bengalhensis 23. Athene brama 24. Accipiter badius



25. Bubulcis ibis 26. Gallus sonnerattii 27. Columba palumbus



28. Oenenthe deserti 29. Prinia socialis 30. Sturnea pagodarum

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