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

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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.

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

S.No	Scientific Name	Family	Food	Distribution	IUCN 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 senegalensis*	Columbidae	Grv,Frv	RD	LC
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*	Cuculidae	Ins, Frv	MV	LC

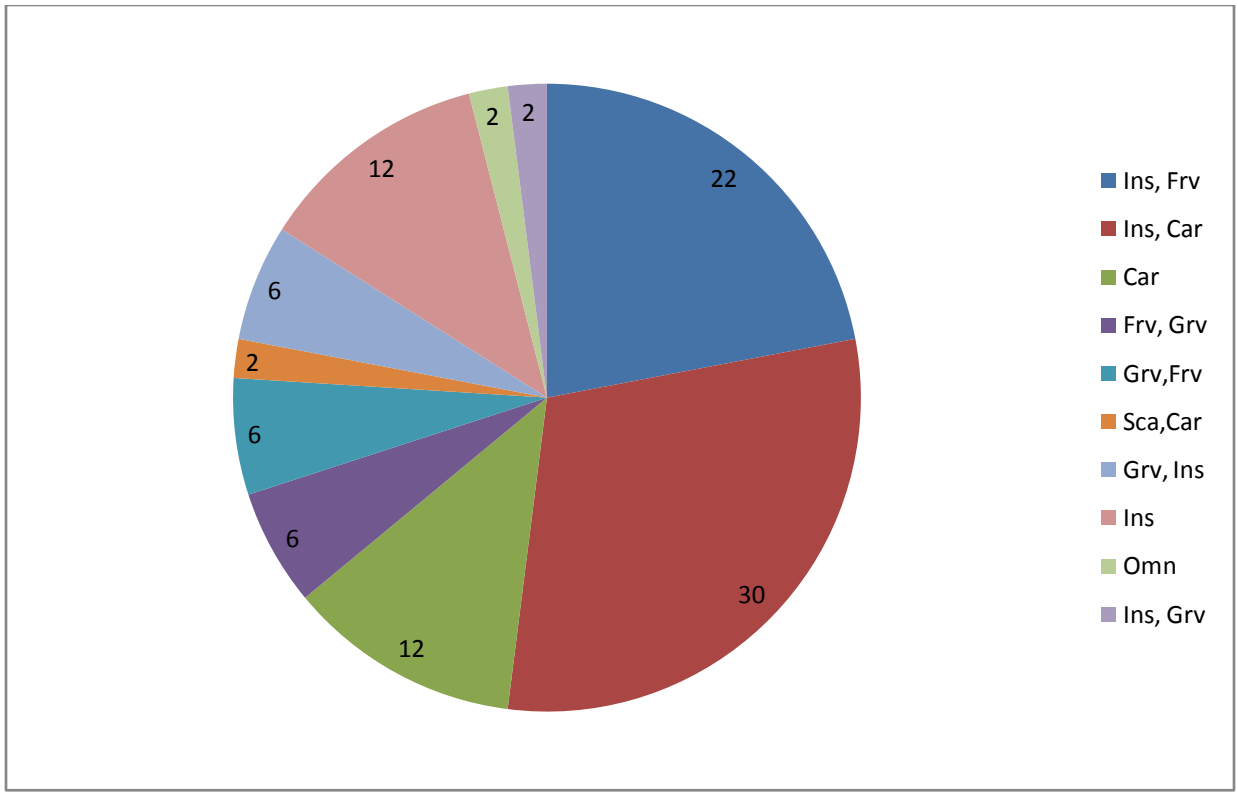
40	*Treron Phoenicopterus*	Columbidae	Grv, Frv	RD	LC
41	*Psittacula eupatoria*	Psittaculidae	Frv, Grv	RD	NT
42	*Ceryle rudis*	Alcedinidae	Car	RD	LC
43	*Tringa glareola*	Scolopacidae	Car	MW	LC
44	*Charadrus dubius*	Chariidae	Ins, Car	RD	LC
45	*Lonchura punctulata*	Estriidae	Grv, Frv	RD	LC
46	*Lonchura malacca*	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, water-waders, terrestrial birds enter the Satpuda-botanical 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 ofthislake 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 system and aquatic systems (wetlands). The greatest impact can be co related to urbanization in Nagpur city that affected species- richness, 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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