

Diversity of Avifauna in the Campus of Govt. Kamla Raja Girls Postgraduate College, Gwalior, M. P., India



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Abstract

In the present study, an attempt has been made to investigate species diversity of avifauna in the campus of Govt. Kamla Raja Girls Post Graduate College, Gwalior and prepared a comprehensive checklist of birds. The study was conducted inside the covered campus of the Govt. Kamla Raja Girls Post Graduate College, Gwalior. A systematic survey of avifauna was done for a period of one year from April, 2015 to March, 2016. During the present survey a total of 38 species of birds were recorded belonging to 24 families and 11 orders. The campus has variety of trees, bushes, herbs, shrubs and climbers which provide adequate food, habitat and security to live. Feeding habits and IUCN's conservation status of the recorded bird species were also studied during the survey.

Keywords: Birds Species, Habitat, Food, Gardens, College Campus.

Introduction

Today there are all together about 10450 species and 27 orders of living birds in the world. In India there are about 1200 species of birds, representing some 75 families and 20 orders. This is a very high number and represents a great variety for a single country (Chavan, 2015). Avifauna is an important constituent as well as an important link in the food chain of any ecosystem. Birds have been considered as useful biological indicators because they are ecologically versatile and inhabit all kinds of habitats (Sivaperuman and Jayson, 2006). The population of birds in any kind of ecosystem shows the environmental quality of area, pollution level, security and availability of food and habitat (Arya *et al.*, 2014a & b). The human-bird association since ancient times and is an intimate one. Birds have always served humans with incalculable services such as pollinators, bio-controllers, scavengers, predators, seed dispersals and so on. Bird populations are at risk due to the loss of natural habitats in all over the world. At present the rapid developmental activities are posing threats to a number of bird species directly or indirectly.

Study Area

The Govt. Kamla Raja Girls Post Graduate College, Gwalior is a pioneer and premier institution for women in higher education in the Gwalior-Chambal division of Madhya Pradesh. The college standing with majestic grace in the heart of the Gwalior city in Kampoo, Lashkar area. It is 7 Km. from Railway Station and Bus Stand of the Gwalior city, so it is easily approachable. The college is housed in one of the palaces of the erstwhile Scindia dynasty. The campus of Govt. Kamla Raja Girls Post Graduate College, Gwalior lies between 26° 11' 26.37" N latitude and 78° 9' 16.15" E longitude. The campus of the college spreads in area of 53714 sq. meters in which 21484 sq. meters is constructed area and covered with buildings. Total 13892 sq. meters area is covered with greenery which is approximately 24% of the campus. 12525 sq. meters area of the campus is used as play ground and reaming 5740 sq. meters area is used for miscellaneous purposes. The college has an impressive historic main building alternated by lush green gardens with big and small trees and bushes. This man-made ecosystem ornamented by so many seasonal and annual flowering plants. The campus of the college has patches of many gardens, grasslands and scrubland (Fig. 1).

Aims of the Study

In the present study, an attempt has been made to find out status and richness of birds species in Govt. Kamla Raja Girls Post Graduate College, Gwalior. The study can also be used to design strategies for

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conservation of bird's diversity in a college campus which has limited resources of food and habitat.

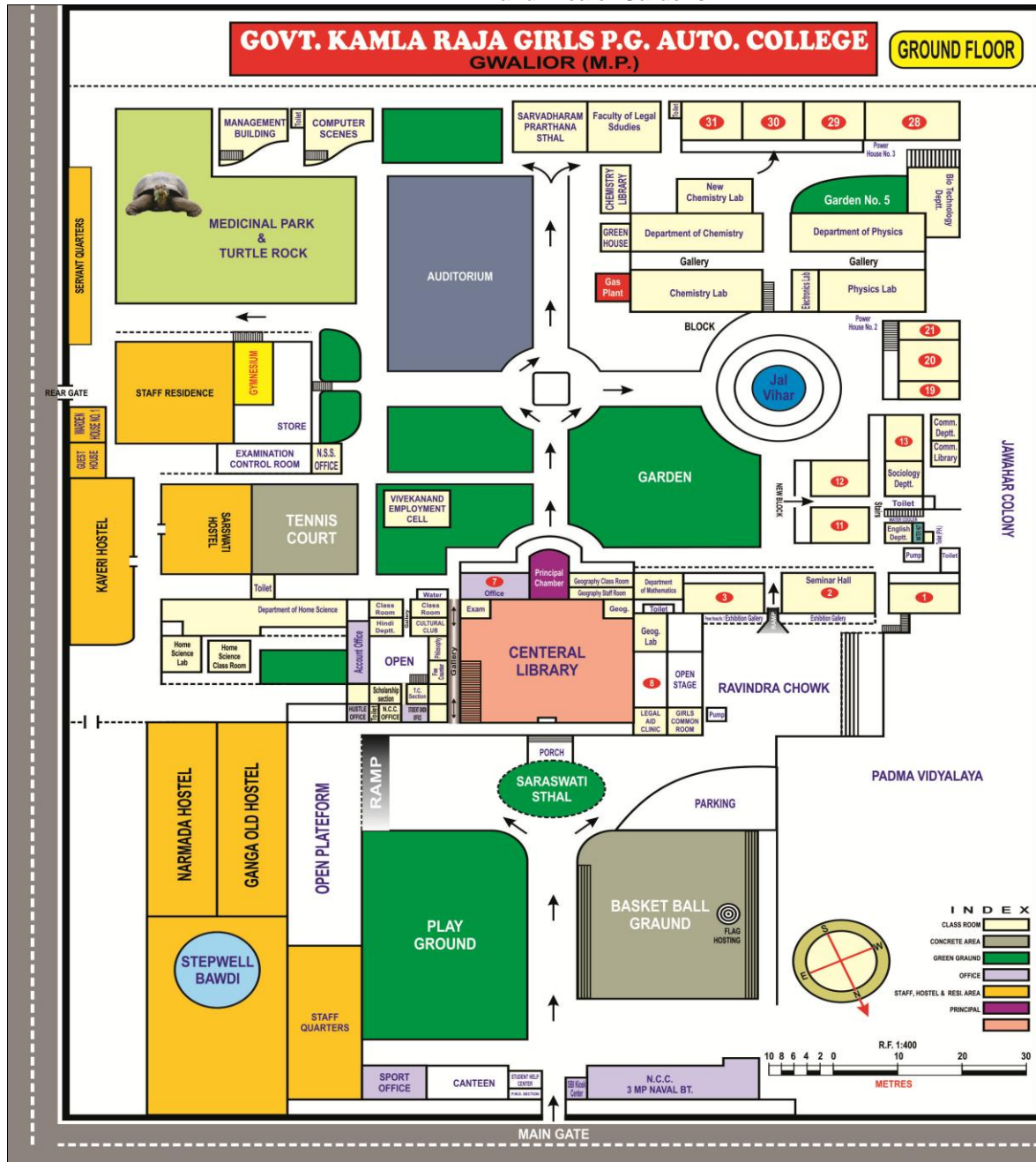
Review of Literature

Diversity of avifauna plays a very important role in determining the health of an ecosystem, especially in an anthropogenically modified landscape. Sagar and Antoney (2015) worked in Christ University campus, Bangalore which is rich in avian diversity with 40 species belonging to 12 orders, 27 families and 35 genera.

Dapke *et al.*, (2015) studied diversity and seasonal abundance of avifauna with vegetation,

composition of habitat and foraging pattern among birds in and around Laxminarayan Institute of Technology (L.I.T.) campus, Nagpur and a total of 62 species of birds belonging to 11 orders and 38 families were recorded. Tandan *et al.*, (2015) studied Avifaunal diversity of Pt. Ravishankar Shukla University Campus, Raipur and recorded 32 bird species belonging to 29 genera. Rathod *et al.*, (2017) surveyed birds in and around 9 different terrestrial habitats in Vadodara city in the semi-arid zone of Gujarat and 82 species were observed during study period.

Fig. 1: Campus of Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior showing Location and Area of Gardens



Source of Map: College record (Not to scale)

Materials and Methods

The checklist of birds recorded in the campus of Govt. Kamla Raja Girls Post Graduate College, Gwalior was prepared by extensive field survey conducted from April, 2015 to March, 2016 mostly in between working hours from 10: 00 am to 5: 30 pm. Standard guides such as Ali & Ripley (1987), Grimmett *et al.*, (1999), Manakadan & Pittie (2001) and Ali (2002) were referred for identification, classification and nomenclature (sequence of orders and families) of birds. Sub specific identification was not made because all the observation was visual and no birds were shot/caught for identification in hands. Different research instruments were used for the study are Binocular (Olympus, 7 × 50) using for direct visual count, Global Position System (GPS) (Garmin 60) and Digital Camera (Nikon, 10x optical zoom and 12 mega pixel).

The observations of bird diversity studies were made by two methods: (i) Short-strip transect counts (SSTC) for continuous walk method. In the SSTC method, walked for 5 min continuously and recorded the bird species encountered while walking. During every five min, an average distance of 10 meters was covered and (ii) Point counts (PC) for stop method. In the PC method, 20 meters transect was laid and at every 10 m distance one point was taken and the bird species were recorded in the 20 m radius in a duration of 15 min (Varma, 2007 and Laxmi Narayana *et al.*, 2011). Information such as the name of the species, the number of individuals, locations and habitats used by birds were recorded during data

collection in both the methods. Seasonal fluctuation and local migration of the bird species were also observed.

The plant species were identified according to Bentham and Hooker's system of classification (1872 -1897) and divided into trees, shrubs, herbs, bamboos, grasses and climbers.

Results

The present study revealed the presence of 38 species of birds of 24 families belonging to 11 orders. Out of these 38 species, most of the species are resident of the area and some are local migratory species they partially migrate locally or nearby places for their specific requirement to season to season or in a particular season. Some species locally displaced in different hours of a single day for their duly requirement. On the basis of family, representation of individual species of families- Columbidae, Sturnidae and Muscipidae were 10.52% with 04 species followed by family- Corvidae 7.89% with 03 species, families- Cuculidae, Strigidae and Motacillidae were 5.26% with 02 species, and families- Accipitridae, Phasianidae, Charadriidae, Psittacidae, Apodidae, Alcedinidae, Meropidae, Coraciidae, Upupidae, Bucerotidae, Capitonidae, Picidae, Oriolidae, Dicruridae, Pycnonotidae, Nectariniidae, Ploceidae were 2.63 % with 01 species, sharing respectively. All the observed species of birds were categorized according to their order, family, names and IUCN's status in table-1 and their representing percentages are showing in table-2 and fig. 2.

Table- 1: Checklist of birds found in the campus of Govt. Kamla Raja Girls Postgraduate College, Gwalior, M. P., India (During April, 2015 to March, 2016).

Order	Families	English Name	Scientific Name	Hindi Name	IUCN Status
Falconiformes	Accipitridae	1 Shikra	<i>Accipiter badius</i> (Gmelin)	Shikra, Cheepak	LC
Galliformes	Phasianidae	2 Indian Peafowl	<i>Pavo cristatus</i> (Linnaeus)	Mor, Mayura	LC
Charadriiformes	Charadriidae	3 Red-Wattled Lapwing	<i>Vanellus indicus</i>	Titeeri, Titai, Titi,	LC
Columbiformes	Columbidae	4 Blue Rock Pigeon	<i>Columba livia</i> (Gmelin)	Kabutar	LC
		5 Yellow-Legged Green Pigeon	<i>Treron phoenicoptera</i> (Latham)	Harial	LC
		6 Eurasian Collared Dove	<i>Sreptopelia decaocta</i> (Fridvaldszky)	Dhor, Fakhta, Parki, Panduk	LC
		7 Little Brown Dove (Laughing Dove)	<i>Sreptopelia senegalensis</i> (Linnaeus)	Chhota fakhta, Parki, Tortra, Panduk	LC
Psittaciformes	Psittacidae	8 Rosy-ringed Parakeet	<i>Psittacula krameri</i> (Scopoli)	Tota, Suva, Mittu	LC
Cuculiformes	Cuculidae	9 Asian Koel	<i>Eudynamis scolopacea</i> (Linnaeus)	Koel, Kokila	LC
		10 Greater Coucal	<i>Centropus sinensis</i> (Stephens)	Mahoka	LC
Strigiformes	Strigidae	11 Barn Owl	<i>Tyto alba</i> (Scopoli)	Kuraya, Karali, Buri churi	LC
	*Tytoninae	12 Spotted Owlet	<i>Athene brama</i> (Temminck)	Oolloo, Khakusat, Chughad	LC
	*Striginae				

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Apodiformes	Apodidae	13	House Swift	<i>Apus affinis</i> (J.E. Gray)	Ababeel, Babeela	LC
Coraciiformes	Alcedinidae	14	White-breasted- Kingfisher	<i>Halcyon smyrnensis</i> (Linnaeus)	Kilkila, Kourilla	LC
	Meropidae	15	Small Green Bee- eater	<i>Merops orientalis</i> (Latham)	Patringa, Harrial	NA
	Coraciidae	16	Indian Roller	<i>Coracias benghalensis</i> (Linnaeus)	Tas, Neelkanth	LC
	Upupidae	17	Common Hoopoe	<i>Upupa epops</i> (Linnaeus)	Hudhud	LC
	Bucerotidae	18	Indian Grey Hornbill	<i>Ocyrceros birostris</i> (Scopoli)	Dhanesh, Selagilli	LC
Piciformes	Capitonidae	19	Brown-headed Barbet	<i>Megalaima zeylanica</i> (Gmelin)	Bada basant	LC
	Picidae	20	Lesser Golden- Backed Woodpecker	<i>Dinopium benghalense</i> (Linnaeus)	Katphora	LC
Passeriformes	Oriolidae	21	Eurasian Golden Oriole	<i>Oriolus oriolus</i> (Linnaeus)	Peelak	LC
	Dicruridae	22	Black Drongo	<i>Dicrurus macrocerus</i> (Vieillot)	Kolsa, Kotwal, Bhujanga	LC
	Sturnidae	23	Brahiminy Starling	<i>Sturnus pagodaram</i> (Gmelin)	Popoya myna, Brahimini myna	LC
		24	Pied Starling	<i>Sturnus contra</i> (Linnaeus)	Ablak, Ablaki myna	LC
		25	Common Myna	<i>Acridotheres tristis</i> (Linnaeus)	Desi myna Gulgul	NA
		26	Bank Myna	<i>Acridotheres ginginianus</i> (Latham)	Ganga myna	LC
	Corvidae	27	Indian Treepie	<i>Dendrocetta vagabunda</i> (Latham)	Mahalat	LC
		28	House Crow	<i>Corvus splendens</i> (Vieillot)	Desi Kowwa	LC
		29	Jungal Crow	<i>Corvus macrorhynchos</i> (Wagler)	Jangli Kowwa, Kala Kowwa	LC
	Pycnonotidae	30	Red-vented Bulbul	<i>Pycnonotus cafer</i> (Linnaeus)	Bulbul, Guldum	LC
	Muscicapidae/ *Timalinae	31	Common Babbler	<i>Turdoides caudatus</i> (Dumont)	Chilchil, Sor, Genga, Dumri, Sat bhai	LC
		32	Oriental Magpie Robin	<i>Copsychus saularis</i> (Linnaeus)	Dhaiyal	LC
	*Turdinae	33	Indian Chat	<i>Cercomela fusca</i> (Blyth)	Shama, Dauma	LC
		34	Indian Robin	<i>Saxicolodides fulicata</i> (Linnaeus)	Kalchuri	LC
	Motacillidae	35	Yellow Wagtail	<i>Motacilla flava</i> (Linnaeus)	Pilkya	NA
		36	White Wagtail	<i>Motacilla alba</i> (Linnaeus)	Dhoban	NA
	Nectariniidae	37	Purple Sunbird	<i>Nectarinia asiatica</i> (Latham)	Shaker-khora	LC
	Ploceidae/ *Passerinae	38	House Sparrow	<i>Passer domesticus</i> (Linnaeus)	Gauriya, Gharelu- chidiya	LC
11	24	38				

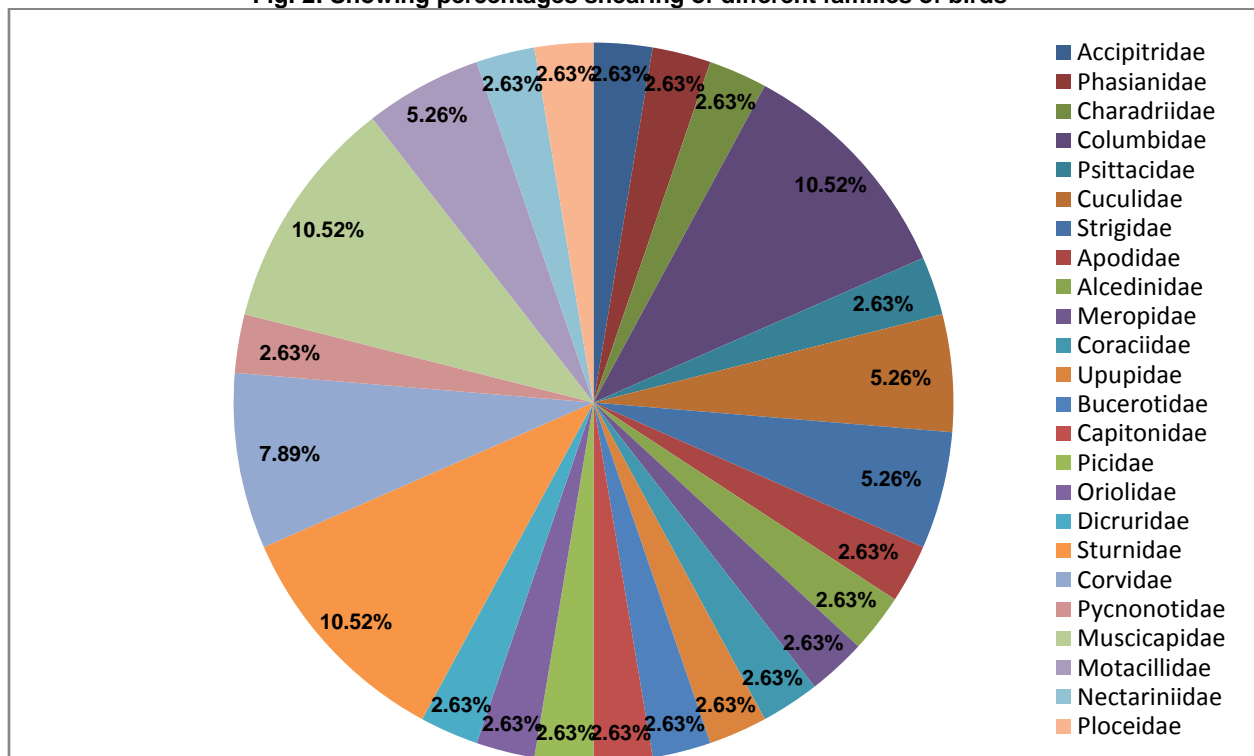
*Sub-family, LC- Least Concern, NA- Not Assessed

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Table- 2: Total Numbers of Birds Species Representing Various Families and Their Percentages

S. No.	Families	No. of Species	Percentage
1.	Accipitridae	01	2.63 %
2.	Phasianidae	01	2.63 %
3.	Charadriidae	01	2.63 %
4.	Columbidae	04	10.52 %
5.	Psittacidae	01	2.63 %
6.	Cuculidae	02	5.26 %
7.	Strigidae	02	5.26 %
8.	Apodidae	01	2.63 %
9.	Alcedinidae	01	2.63 %
10.	Meropidae	01	2.63 %
11.	Coraciidae	01	2.63 %
12.	Upupidae	01	2.63 %
13.	Bucerotidae	01	2.63 %
14.	Capitonidae	01	2.63 %
15.	Picidae	01	2.63 %
16.	Oriolidae	01	2.63 %
17.	Dicruridae	01	2.63 %
18.	Sturnidae	04	10.52 %
19.	Corvidae	03	7.89 %
20.	Pycnonotidae	01	2.63 %
21.	Muscicapidae	04	10.52 %
22.	Motacillidae	02	5.26 %
23.	Nectariniidae	01	2.63 %
24.	Ploceidae	01	2.63 %
Total		38	

Fig. 2: Showing percentages shearing of different families of birds



Availability of food and suitable habitat facilitated resident and some local migratory bird species to visit and stay in the campus of the college. This food includes grains, seeds, fruits, nectar, green vegetation and grasses, insects, worms and larvae, rodents etc., found in the various parts of plants, from

soil and air. Feeding habits of the recorded birds were also studied during the survey. Out of 38 species total 13 species were observed as omnivores which are highest in number. 12 species observed as insectivores, 05 species were granivores, 05 species were predators and 03 species were recorded as

frugivores (Table-3). So many flowering and fruiting plant species are well developed and well spared in the various parts of the campus. The rock turtle garden is thick, dense and more undisturbed area of the campus which has varieties of trees, bushes, herbs, shrubs and climbers. Recorded trees species were Bel (*Aegle marmelos*), Bargad (*Ficus bengalensis*), Pipal (*Ficus religiosa*), Neem (*Azadirachta indica*), Kachnar (*Bauhinia variegata*), Palas (*Butea monosperma*), Bottle Brush (*Callistemon lanceolatus*), Amaltas (*Cassia fistula*), Pawar (*Cassia tora*), Shisham (*Dalbergia latifolia*), Gulmohar (*Delonix regia*), Mahua (*Madhuca indica*), Kaitha (*Feronia limnoria*), Mithinim (*Murraya koenigii*), Kadam (*Anthocephalus kadamba*), Asok (*Polalthia longifolia*), Sagon (*Tectona grandis*), Arjun (*Terminalia arjuna*), Gular (*Ficus racemosa*), Rubber tree (*Ficus elastic*), Toon (*Cedrela toona*), Babul (*Acacia nilotica*), Karanj (*Pongamia pinnata*).

Horticultural plants (fruiting and flowering) attracted many frugivorous and nectarivorous bird species. Some horticultural plants which were found in campus are Kathel (*Artocarpus heterophyllus*), Aam (*Mangifera indica*), Jamun (*Syzygium cumini*), Amla (*Emblica officinalis*), Imli (*Tamarindus indica*), Shahtoot (*Morus laevigata*), Sitaphal (*Anona squamosa*), Amrood (*Psidium Guava*), Neebu (*Citrus*

synensis), Kela (*Musa paradisiaca*), Anaar (*punica granatum*), Senjhna (*Morinda oleifera*), Papeeta (*Carica papaya*). Some flowering plants were Soorajmukhi (*Helianthus annuus*), Genda (*Tagetes erecta*), Guldaudi (*Chrysanthemum indicum*), Chandini (*Iberis amara*), Kanher (*Nerium indicum*), Gulab (*Rosa indica*), Gurhal (*Hibiscus rosa sinensis*).

Shrubs and herbs are Harsinghar (*Nyctanthes arbortristis*), Gulmehendi (*Impatiens balsamina*), Sawani (*Lagerstroemia indica*), Tulsi (*Ocimum sanctum*), Datura (*Datura stramonium*), Gawar-patha (*Aloevera*), Besharam (*Ipomoea batatas*), Raimunia (*Lantana camara*), Akauwa (*Calotropis procera*), Nagphani (*Opuntia dillenii*), Karonda (*Carissa opaca*), Makoi (*Solanum nigrum*), Bhata-katani (*Solanum indicum*), Peeli-kteri (*Argemone mexicana*), Jharberi (*Zizyphus nummularia*), Ber (*Zizyphus jujuba*), Vidya (*Thuja occidentalis*), Cocoloba (*Muehlenbeckia platycladus*).

Climbers and grasses are Satawar (*Asparagus recemosus*), Geloy (*Tinospora cordifolia*), Woolly morning glory (*Argyria nervosa*), Sargandha (*Rouvolfia serpentine*), Amarbel (*Cuscuta reflexa*), Doob (*Cynodon dactylon*), Khus (*Desmostachya bipinnata*). Some agricultural climbers were Sem (*Dolicos lablab*), Kaddu (*Cucurbita pepo*), Toriya (*Luffa cylindrica*), Lohki (*Lagenaria vulgaris*).

Table- 3: Feeding Habits of Different Species of Birds

Insectivores	Predators	Granivores	Frugivores	Omnivores
House Swift	Shikra	Blue Rock Pigeon	Rosy-ringed Parakeet	Indian Peafowl
Small Green Bee-eater	Greater Coucal	Yellow-Legged Green Pigeon	Indian Grey Hornbill	Asian Koel
Indian Roller	Barn Owl	Eurasian Collared Dove	Brown-headed Barbet	Eurasian golden Oriole
Common Hoopoe	Spotted Owlet	Little Brown Dove	—	Brahiminy Starling
Lesser Golden-Backed Woodpecker	White-breasted-Kingfisher	House Sparrow	—	Pied Starling
Black Drongo	—	—	—	Common Myna
Oriental Magpie Robin	—	—	—	Bank Myna
Indian Chat	—	—	—	Indian Treepie
Indian Robin	—	—	—	House Crow
Yellow Wagtail	—	—	—	Jungal Crow
White Wagtail	—	—	—	Red-vented Bulbul
Red-Wattled Lapwing	—	—	—	Common Babbler
—	—	—	—	Purple Sunbird (Nectar Feeder)
12	05	05	03	13

Conclusion

The present study revealed that Govt. Kamla Raja Girls Post Graduate College, Gwalior harbors rich diversity of birds. The population of avifauna survives and utilizes this micro habitat for fulfill their daily requirements, which are excellent indicators of ecological health of the campus. The campus provides a safe and peaceful natural habitat in the most busy, crowded and noisy area in the city. The campus also provides protected and undisturbed habitat to birds for feeding, resting, breeding and nesting.

This survey also indicates the importance of bird population and their conservation over the small

campus gardens of schools and colleges to create great awareness among the students community. Because these habitats are comprised of more resources in terms of trees, shrubs and food sources, which will provide the feeding and foraging sites for birds. The highest diversity of birds was due to more diversity of plants which gives more choice for the food preference of the bird species as well as nesting and breeding place. Some local migratory birds visited the study site in particular season, shows the richness of the habitats of the study area. The considerable numbers of trees in campus and fellow land accommodate the large number of bird's population.

Thus it shows planting trees and seasonal plants in the gardens of campus can increase the bird diversity.

Acknowledgement

I am very much thankful to Principal and all the staff members of the Govt. Kamla Raja Girls Post Graduate College, Gwalior, M. P. for their support and continuous encouragement.

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