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Feeding Guilds of Avifauna of Gharana Wetland Reserve-Jammu (J&K), India

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Abstract

An avian survey was carried out in Gharana wetland reserve from Jan 2012 to Jan 2014 to record the avifaunal diversity and their feeding guilds. Gharana wetland Reserve is one of the most important wetland reserve of Jammu region of Jammu and Kashmir state and serves as feeding, roosting and wintering grounds for large number of migratory water birds during their palaeartic to oriental migration. It lies between 32^{0}36' 51.52" N latitude and 74^{0}38'58.15E longitudes. The study documents 57 species of birds. Feeding guilds were divided into 6 major categories viz carnivorous, grainivorous, frugivorous, omnivorous, insectivorous, herbivorous. The highest number of bird species was observed to utilize more than one feeding guild followed by carnivorous, herbivorous, insectivorous, grainivorous, omnivorous and frugivorous. The gharana wetland provides a rich feeding ground to both migratory as well as resident birds.

Keywords: Wetland, Feeding guild, aquatic waterfowl, Jammu.

Introduction

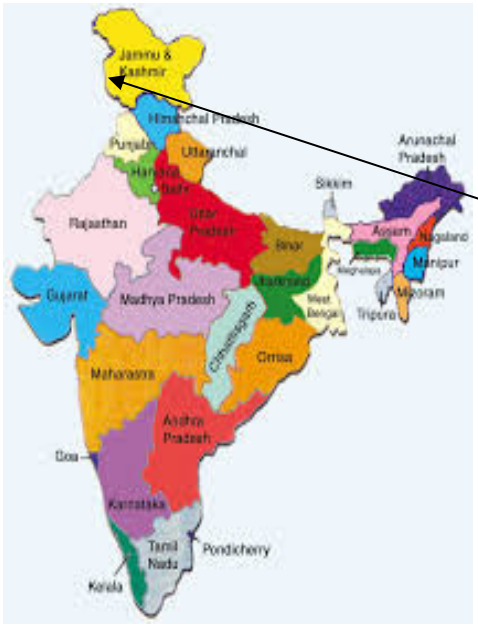
A wetland is a land area that is saturated with water, either permanently or seasonally such that it takes on the characteristics of distinct ecosystem, which is biologically diverse and serves as home to wide range of plant and animal life. Wetlands are natural areas where water helps in development of aquatic and plant life. In India, there are many wetlands of international, national and regional importance[1]. Wetlands of India are very diverse and range from lakes to lagoons, playing a vital role in maintaining biodiversity[2]. The wetland is used by a diverse number of bird species for foraging, nesting and roosting due to their heterogeneity of microhabitats and available rich food resources[3-4]. Wetland birds utilize the wetland habitat to meet their needs. Thus degradation of wetlands have affected the bird populations. There is a global need for recognition of value of wetlands. Wetland management practices should consider the value of wetland as well as various aspects of the effect of human activities on the water quality[5]. Birds are highly mobile and seasonal. The species composition of a particular area may change due to influx of migratory birds. Birds vary a great deal, however, in the extent to which they specialize in a particular environment and a particular item of food. As long as the environment remains unaltered, its conditions regulate the type of species and their numbers. This is a complex and delicate web of life in which all the constituent parts are interdependent, depending upon the three factors of primary importance i.e occurrence of food, nesting places, and predators. A feeding guild can be defined as "a group of species that exploits the same class of environmental resources in the same way[6]. Avian feeding guilds have been suggested as a suitable indicator to monitor all components and interactions of an ecosystem[7]. For birds, food is usually considered to be the most important resource and the feeding guilds have been used extensively by ornithologists in interpreting the assemblages of species. Birds are tolerant of habitat change and they show wide range of feeding guilds[8].

Material and Methods

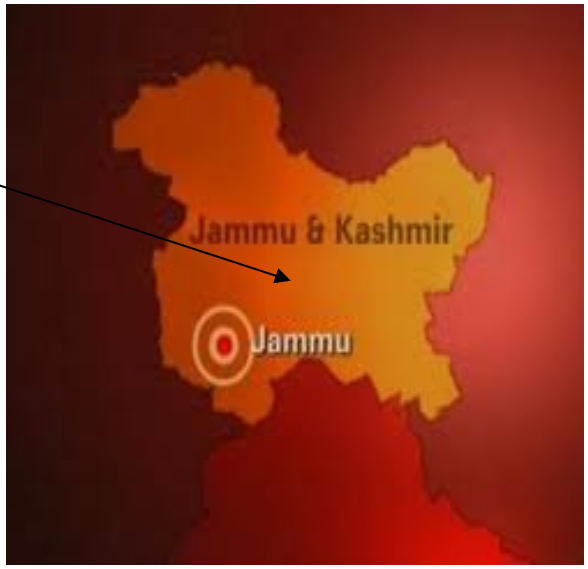
Study area: The study area i.e. Gharana Wetland is situated between the 32^{0}36'51. 52" N latitudes and 74^{0}38'58.15 E longitudes. It is located at an elevation of 270 meters above sea level. The station is situated near the Indo-Pak International Border in R.S. Pura Tehsil of Jammu District and is at a distance of 35 km from Jammu City. Main sources of water to this wetland are spill over water from Ranbir Canal and surface run-off from agricultural fields. Village Gharana is situated very near to the wetland and lies along the North-South fly way Palaeartic-Oriental migratory route of waterfowls. This reserve is famous for migratory waterfowls. The notified area of Gharana, barring a small patch of marshy pond and adjoining area, more or less comprises of agricultural fields. It is irregular in shape and is declared as "Important Bird Area" and is under wildlife protection Act J&K (1978). The climate is subtropical. Gharana wetland is a naturally maintained swamp surrounded by various macrophytes like Eicchornia sp, hydrilla sp, and Typha i.e. common reed. Area is infested with weeds and is rain fed. The bottom surface comprises loamy clay with decaying vegetation. The reserve area is surrounded with crop fields. Paddy and wheat are the main crops grown by villagers.

Methodology: A through survey was done to study the avian diversity and feeding guilds of the study area from Jan 2012 to Jan 2014. For analysis of avian fauna, Line transect[9] and point

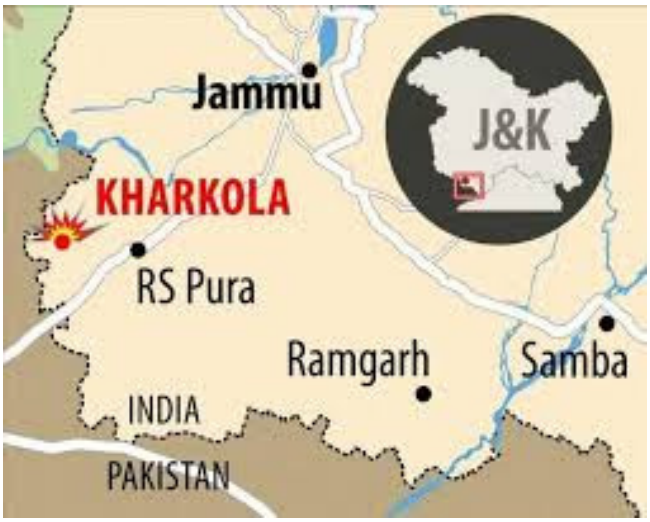
transect[10] methods were used. Identification of the recorded bird species was done with help of field guides and reference books[11-14]. Bird watching and their feeding behaviour were done early in the morning and before sunset in the evening. Besides this, several irregular visits were also made during different hours of the day. Binocular (Bushnell make) was used to record the feeding behaviour of the bird from the distance in order to avoid any distance to them. Photographs were taken with help of 36 X optical zoom camera (Nikon) for easy and correct identification of bird species.



Map of India



Map of Jammu & Kashmir



Location Of Gharana Wetland Reserve - R.S. PURA (Jammu)

Figure-1
Map of Study Area i.e. Gharana Wetland

Figure-2
A View of Gharana Wetland Reserve

Figure-3
A Feeding Flock of Bar Headed Geese

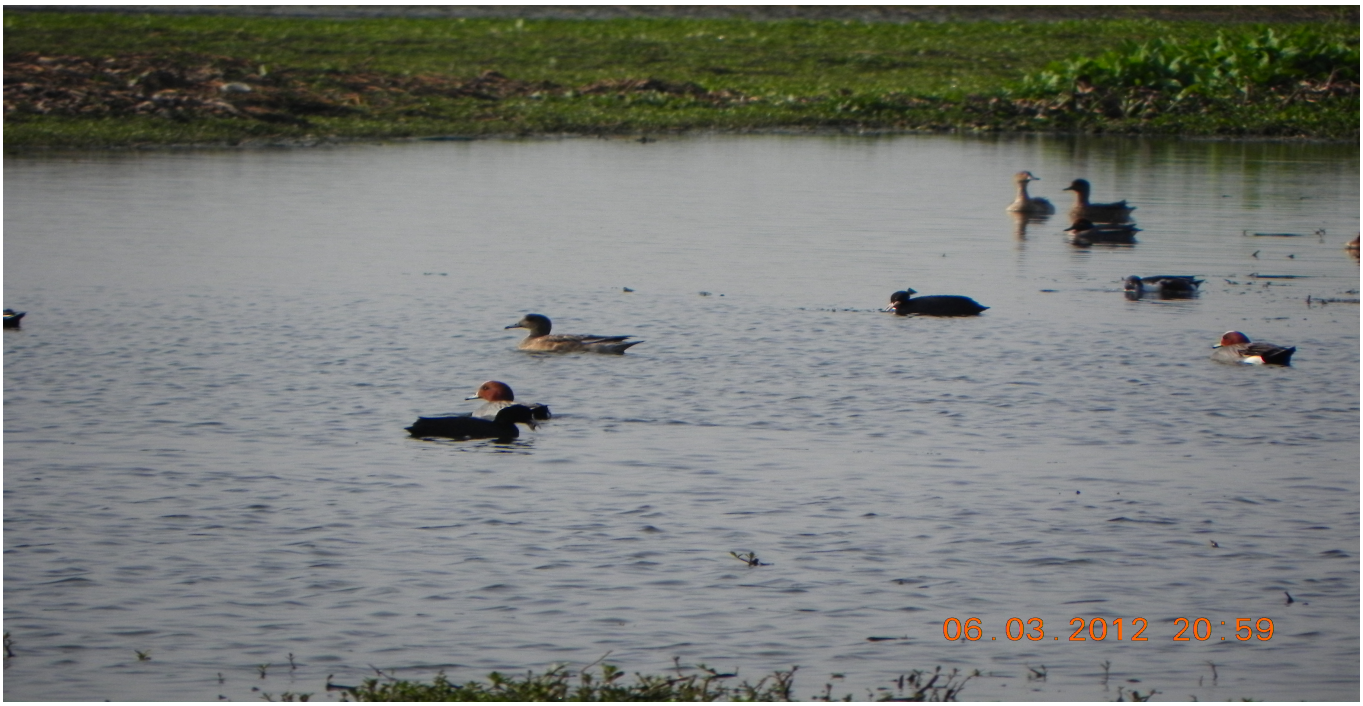


Figure-4
Different Migratory Ducks in the Wetland

Results and Discussion

The present study was carried out with the aim to analyze the different feeding guilds of the birds in the Gharana Wetland Reserve. Birds are tolerant of habitat change and they show a wide range of feeding guilds[15]. Availability of food in good quantity and quality constitutes one of the prime requisite of bird species in an area. During the present study, records were made of the feeding guilds of 57 avian species. Out of total 57 avian species reported, 16 species were carnivorous, 6 were grainivorous, 1 was frugivorous, 2 were omnivorous, 7 were insectivorous, 8 were herbivorous and 17 species used multiple feeding guilds. A wide stretch of agricultural fields skirting the wetland along with native trees provide additional food to birds in form of seeds, tree-fruits, bees, and animal feeds. So the birds like Red Wattled Lapwing, Indian Myna, White Wagtail, Grey Wagtail, Red Vented Bulbul showing multiple feeding guilds inhabit this area.

Birds of prey such as Pariah Kite, Black Winged Kite, Indian Shikra. Marsh Harrier are completely carnivorous. Their diet consist of fish, eggs and young ones of small birds. Heron primarily feed on fish, it uses its long pointed beak to snatch its prey out of water or from ground. Egrets eat fish, insects, and amphibians. They stalk their prey in shallow water, shuffling its feet to disturb small fish. They may stand still and wait to ambush prey. King fishers eat all aquatic fare like tadpole and fish. Wetland bank and adjoining trees are their seats where they eagerly wait for their prey i.e. fish. Insectivore such as Black Drongo feed on insects. They congregate in adjoining agricultural fields that are ploughed, picking up exposed caterpillars and beetle grubs. Collared pratincole finds its prey in swarming insects, picking the prey from air with a elegance in ploughed fields. House crow feeds in the rice fields because of the greater availability of more number of prey items and also share their feeding sites with Mynas and Cattle Egrets[16].

Ducks, Moorhens and Coots use open water and feed in emergent vegetation. Cormorants and Grebes are known as diving birds as they dive for bottom dwelling animals. White Breasted Waterhen feeds on worms, insects and grain seeds.

Gharana wetland is an avian splendour for the migratory waterfowls such as Bar Headed Geese, Northern Pintail, Northern Shovellar, Gadwall, Lesser Whistling duck and Eurasian Wigeon. About fifteen to twenty thousand birds pass their winters at Gharana. This wetland is on the migration path of waterfowls. Vegetarian birds eat the fruits, tubers and leaves of wetland plants. The increase in the number of migratory species in winter is attributed to availability of space and food resources. Rice fields provide important water bird habitat from perspectives of food quality and quantity, as they provide natural food in form of moist soil plant seeds, and green forage.

Thus Gharana Wetland provides diverse food resources to the birds in form of plants and animals. Some birds find food in wetland soil and others in water column. Aquatic vegetation, abundance of benthic invertebrates, dipteran larvae, variety of insects and a wide stretch of paddy fields adjoining the wetland attributes to the different types of feeding guilds which were employed by various bird species.

Table-1
Feeding guilds of avian fauna of Gharana Wetland, Jammu

S No	Name of Bird	Scientific Name	Feeding guild
	I Carnivorous		
1.	Little Grebe	*Podiceps rudicolles*	DC
2.	Little Cormorant	*Phalacrocorax niger*	WC
3.	Large Cormorant	*Phalacrocorax carbo*	WC
4.	Night Heron	*Nycticorax nycticorax*	WC
5.	Indian Pond Heron	*Ardeola grayii grayii*	WC
6.	Grey Heron	*Ardea cinerea*	WC
7.	Pariah kite	*Milvis migrans*	ATC
8.	Black Winged Kite	*Falco vociferous*	ATC
9.	Indian Shikra	*Accipiter badius*	ATC
10.	Northern Spotted Owlet	*Athene brama*	ATC
11.	Common Kingfisher	*Alcedo atthisbengalsis*	AAqC
12.	Pied Kingfisher	*Cercyle rudius*	AAqC
13.	Indian Roller	*Coracias bengalensis*	ATC
14.	Rufous Backed Shrike	*Lanius scahach*	ATC
15.	Little Egret	*Egretta garzetta*	WC
16.	Marsh Harrier	*Cercus aeroginous*	ATC
	II Grainivorous		
1.	Indian Blue Rock Pigeon	*Columbia livia*	G
2.	Indian Ring Dove	*Streptopelia decocota*	G
3.	Indian Spotted Dove	*Streptopelia chinensis*	G
4.	Indian Brown Dove	*S. cambayensis*	G
5.	Spotted Munia	*Lonchura punctulata*	G
6.	Baya Weaver	*Ploceus phillipinus*	G
	III. Frugivorous		
1.	Rose Ringed Parakeet	*Psittacula krameri*	F
	IV. Omnivorous		
1.	House Crow	*Crovus splendenes*	ATO
2.	Indian Jungle Crow	*Corvus macrorhynchos*	ATO
	V. Insectivorous		
1.	Indian Green Bee Eater	*Merops orientalis*	AI
2.	Common Sand Piper	*Actitis hypoleucos*	SIP
3.	Black Drongo	*Dicrurus adsimilis*	AI
4.	Indian Robin	*Saxiccoloides fulicata*	TI
5.	Indian Magpie Robin	*Copsychus saularis*	TI
6.	Jungle Babbler	*Turdoides striatus*	UI
7.	Collared Pratincole	*Glareola pratincola*	AI
	VI. Herbivorous		
1.	Bar Headed Geese	*Anser indicus*	H
2.	Northern Pintail	*Anas acuta*	DH
3.	Northern Shovellar	*Anas clypeata*	DH
4.	Common Teal	*Anas crecca*	DH
5.	Gadwell	*Anas stepra*	DH
6.	Eurasian Wigeon	*Anas penelope*	DH
7.	Common Coot	*Fulica atra*	DH
8.	Lesser Whistling duck	*Dendrocygninae javanica*	H
	VII. Birds Using Multiple guilds		
1.	Cattle Egret	*Bubulcusibis coromandus*	WC/UI
2.	Red wattled lapwing	*Vanellus indicus*	SIP/TI
3.	White Breasted Kingfisher	*Halcyon smyrensis*	ATC/AAqC
4.	Indian Koel	*Eudynamys scolopacea*	F/I

5.	Crow Pheasant	*Centropus sinensis*	CI/UI/TO
6.	Bank Myna	*Acridotheres ginginnianus*	G/F/I
7.	Indian Myna	*Acridotheres tristis*	G/F/I
8.	Red Vented Bulbul	*Pycnonotus cafer*	F/I
9.	White Wagtail	*Motacilla alba*	SIP/TI
10.	Yellow Wagtail	*Motacilla flava*	SIP/TI
11.	Indian House Sparrow	*Passer domesticus*	G/I
12.	Indian Moorhen	*Gallinula chloropus*	WC/SIP
13.	Purple Moorhen	*Porphyrio porphyrio*	WC/SIP
14.	Black Winged Stilt	*Himanotapus himantopus*	SIP/AqC
15.	Indian White Breasted Waterhen	*Amaurornus pheoenicurus*	WC/SIP/TI
16.	Indian Large Pied Wagtail	*Motacilla maderapatensis*	SIP/TI
17.	Grey Wagtail	*Motacilla caspica*	SIP/TI

Main Feeding guilds: C- Carnivorous,G – Granivorous, F – Frugivorous, O – Omnivorous I – Insectivorous, H – Herbivorous.

Sub feeding guilds: WC- Wading carnivore, DC – Diving carnivore, ATC – Arboreal Terrestrial Carnivore, AAqC – Arboreal Aquatic Carnivore, AI – Aerial Insectivore, SIP – Shore Insect Plover, TI – Terrestrial insectivore, UI – Understorey insectivore, DH – Diving Herbivore, ATO – Arboreal Terrestrial Omnivore.

Carnivore: Feeding on animal matter like fish, amphibians, reptiles, buds and small mammals.

Grainvore: Feeding on grains

Frugivore: Feeding on fruits

Insectivore: Feeding on insects

Herbivore: Feeding on young shoots, roots, leaves and sprouts of vegetation.

Omnivore: Feeding on all types of food including vegetable matter, fruit, insects and other animal matter.

Conclusion

Gharana Wetland is biologically very productive and provides feeding grounds for a diverse range of resident and migratory birds. Thus in birds, feeding guilds provide insight into the ecology of species and are particularly useful in studies that assess specific ecological drivers of community change. Species belonging to the same guild utilize the same kind of resource in a similar manner. Guild categorization among birds emphasizes upon functional component of community in an ecosystem[17]. Feeding is an important activity in the life of the bird which is indispensible for their survival[18].

References

1. Pradhan R.N etal., Checklist of Birds in and around Ansupa lake, Odisha, India, *Int. Res. J. Environment Sci*., **2(11)** 9-12 **(2013)**

2. Tripathy M., Biodiversity of Chilka and its conservation, Odisha, India, *Int. Res. J. Environment Sci*., **1(5)** 54-57 **(2012)**

3. Mitsch W.J. and Gosselink J.G., Wetlands Van Nostrand Reinhold, *New York* (**10**), 071699675 **(2007)**

4. Zakaria M.M.N. Raipar and S.A. Sajap, species diversity and feeding guilds of birds in Paya Indah Wetland Reserve, Peninsular Malaysia, *International Journal of Zoological Research*., **5(3)**, 86-100 **(2009)**

5. Safari D., Mulongo G. Byarugaba D. and Tumwesigye W., Impact of human activities on the quality of water in Nyaruzinga Wetland of Bushenyi District- Uganda, *Int. Res. J. Environment Sci*., **1(4)** 1-6 **(2012)**

6. Root R.B., The Niche exploitation pattern of Blue-Gray Gnatcatcher, *Ecological monographs*, **37 (4)**, 317-350 **(1967)**

7. Ghazoul J. and Hellier A., Setting limits to ecological indicators of sustainable tropical forestry International, *Forestry Rev*. **(2)**, 243-253 **(2000)**

8. Johns A.D., Responses of Amazion rainforest birds to habitat modification, *Journal of Tropical Ecology*, **7(4)**, 417-437 **(1991)**

9. Sale J.B. and Berkmuller K., Manual of Wildlife techniques for India, Food and Agriculture Organisation of United Nations, Dehradun **(1988)**

10. Verner J., Assessment of counting chniques, *Current Ornithology*, **(2)**, 247-302 **(1985)**

11. Ali, S. and Repley, S.D., Handbook of Birds of India and Pakistan, Compact Edition, Oxford University Press, Bombay, **(1983)**

12. Bates R.S.P, and Lowther E.H.H., Breeding Birds of Kashmir, Oxford Univ. Press, London **(1952)**

13. Grewal B., Harvey B. and Pfister O., A photographic guide to the Birds of India, Periplus Edition (HK) Ltd., Singapore, **(2002)**

14. Grimmett R., Inskipp C. and Inskipp T., Birds of Indian Subcontinent, Oxford University Press, Delhi **(1998)**

15. Johns, A.D., Responses of Amazion rainforest birds to habitat modification, *Journal of Tropical Ecology*, **7 (4)**, 417-437 **(1991)**

16. Koul S. and Sahi, Feeding ecology of House Crow *(Corvus splendens)* in open Agricultural fields in Jammu (J&K), India, *Int. Res. J. Environment Sci*., **2(6)** 85-87 **(2013)**

17. Wilson, J.B., Guilds, functional types and ecological groups, *Oikoo* **86 (3)**, 507-522. **(1999)**

18. Anthal A. and Sahi D.N., Food and feeding ecology of Jungle Babbler, *Turdoides striatus sindianus* (Ticehurst) in District Jammu (J&K), India, *Int. Res. J. Environment Sci*., **2(7)** 54-57 **(2013)**