

Birds Diversity at Shahid Bhima Nayak Dam, Silavad

Paper Submission: 10/12/2021, Date of Acceptance: 21/12/2021, Date of Publication: 24/12/2021

Abstract

The present study was carried out at Barwani located in Madhya Pradesh. At Shahid Bhima Nayak Dam, Silavad. Dam site is situated across River Goi a tributary of River Narmada 21 Km away from District Barwani near Village Panchkula. We observed 64 species of birds. All the above species belonged to 16 orders. Order Passeriformes were dominant among them. The results showed that the diversity is rich in particular study areas. The alpha diversity of Shahid Bhima Nayak Dam, Silavad is 64 (α Diversity = 64). At Shahid Bhima Nayak Dam, Silavad the species richness was $S = 64$; Simpson's diversity indexes were $D = 00.100$; Simpson's equitability indexes were $E = 00.853$; Shannon Weiner's indexes were $H' = 2.343$.

Keywords: Birds, Barwani, Diversity, Family, Order.

Introduction

Avifauna plays a crucial role as a scavenger, pollinator, seed dispersal agent and predators of insect pest. (Padmavati et al., 2010). According to the IUCN Red List, 2018, 1,375 species of birds are considered to be threatened with extinction globally, out of which 9 are from India. (IUCN 2018). Birds are highly sensitive to any obnoxious condition and fly away to avoid it. Hence, they are considered as important health indicators of the ecological conditions and productivity of an ecosystem. (Li and Mundkur, 2007). Monitoring of wetland birds provides valuable information on the ecological health and status of wetlands and can be a vital tool for developing awareness regarding the conservation value of the wetland. The importance of local landscapes for conservation of avifauna can only be understood by knowing the structure of the bird's community of that region. (Kattan and Franco, 2004).

Review of Literature

Birds play an important role in the ecosystem by controlling the number of insects, rodents and reptiles, helping pollination and spreading seeds of different plant species and being a prey to larger predator species. That's why their contribution to properly functioning ecosystems cannot be underestimated. (Marquis and Whelan, 1994). In addition, they are regarded as a visible indicator for biological biodiversity and changes in environmental conditions. (Furness and Greenwood, 1993). Birds are likely to have problems with wintering and nestling. Their healthy stable numbers are thus inadvertently affected. (King and Degraaf, 2000). India is a mega diversity country, is among the top ten nations endowed with the world's richest biodiversity. Its immense biological diversity represents about 7% of the world's flora and 6.5% of the fauna. Madhya Pradesh is one of the biodiversity states in India. The species richness in the forest and water bodies of M.P. is significantly higher in comparison to other states. (Rao and Bhatnagar, 2001). Thus, biodiversity is real, but unrecognized wealth of the country.

Gaur et al., (2019) Analysed spatial variation in avifaunal diversity from various green spaces of Indore city, Madhya Pradesh. Pandey et al., (2021) Observed water analysis of water bodies of Jamghat Temple Wachoo point, Gavalan Pati and double Golai at Vindhya forest reserve Khargone, District (M.P.). Prakash et al., (2004) Observed birds of Holkar science college campus, Indore. Datta (2011) Observed human interference and avifaunal Diversity of two wetlands of Caligiuri, west Bengal, India.

Aim of the Study

The present study was carried with an aim to study avian diversity at Barwani location in Madhya Pradesh. The Name of the study location is Shahid Bhima Nayak Dam, Silavad. Dam which is situated across River Goi a tributary of River Narmada 21 Km away from District Barwani near Village Panchkula.

Material and methods

Study area

Shahid Bhima Nayak Dam, Silavad

Description

Silavad (Dhababavdi Village) Shahid Bhima Nayak Dam, it is located at latitude 21. 6827" N and longitude 74.9216" E. The tribal of Panchkula North from



Asha Chouhan
Research Scholar
Dept. of Zoology
Govt. Holkar Science
College indore,
M.P., India

the back water of the Shahid Bhima Nayak Dam (Lower Goi) built in the Silavadee area of the district are now facing trouble. There are more than 50 families residing in this pod and it has more than 250 members. Dam site is situated across River Goi a tributary of River Narmada 21 Km away from District Barwani near Village Panchkula. Construction work of the main Dam has been started. On the right bank a tunnel of 5.7 Km and 30 Km long main canal is under construction. The study was conducted in the year 2018-2020.

100 visits were conducted in each season in all the sites collectively (8) visits in each season in each site.

In Various avian counting methods, we used the following three methods for present study. Which are suitable for present study.

1. Look and see Methods.
2. Point count Methods.
3. Direct count Methods (Individual Species).

Observations and sighting records of birds were taken from the whole Dam.

Bird species were recorded and identified based on sightings, Photographs and calls. Classification of birds was carried out in a book of Indian birds. (Ali 2002).

Figure and table were prepared by using Microsoft Excel.

Study Design

The present study was based on the following analysis –

1. Species richness – Number of varied species found in a landscape region of ecological community called species richness.
2. Species abundance-Species abundance is the number of individuals per species.
3. Frequency of Species- Number of times a species presents in a particular time interval is called frequency of species.

Diversity indices

Species richness Simpson's diversity index.

Results

In the study location, we observed 64 species of birds. All the above species belonged to 16 orders. Order Passeriformes were dominant among them.

At study site Shahid Bhima Nayak Dam, Silavad, the relative diversities of birds are as follows (Order wise): Accipitriformes 6.25%, Anseriformes 4.69%, Caprimulgiformes 1.56%, Charadriiformes 12.50%, Ciconiiformes 3.13%, Columbiformes 3.13%, Coraciiformes 6.25%, Cuculiformes 1.56%, Galliformes 3.13%, Gruiformes 1.56%, Passeriformes 40.63%, Pelecaniformes 7.81%, Podicipediformes 1.56%, Psittaciformes 3.13%, Strigiformes 1.56% and Suliformes 1.56%.

The results showed that the diversity is rich in particular study areas. The alpha diversity of Shahid Bhima Nayak Dam, Silawat is 64 (α Diversity = 64). At Shahid Bhima Nayak Dam, Silavad the species richness was S = 64; Simpson's diversity indexes were D = 00.100; Simpson's equitability indexes were E = 00.853; Shannon Weiner's indexes were H' = 2.343.

Figure 1
Order wise trend at the Site

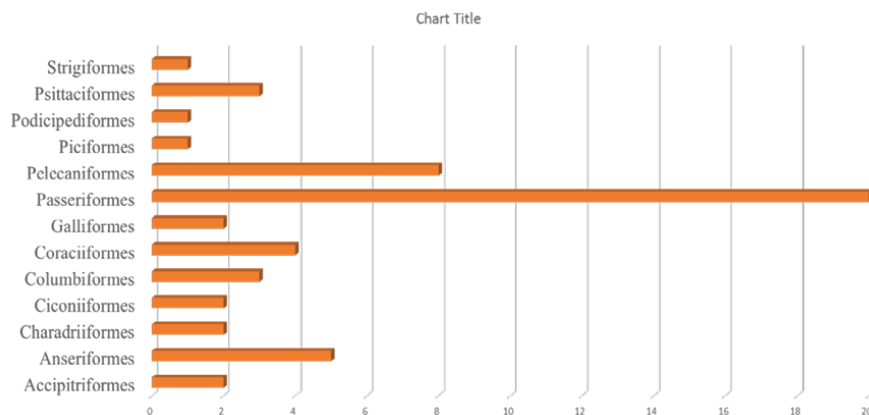
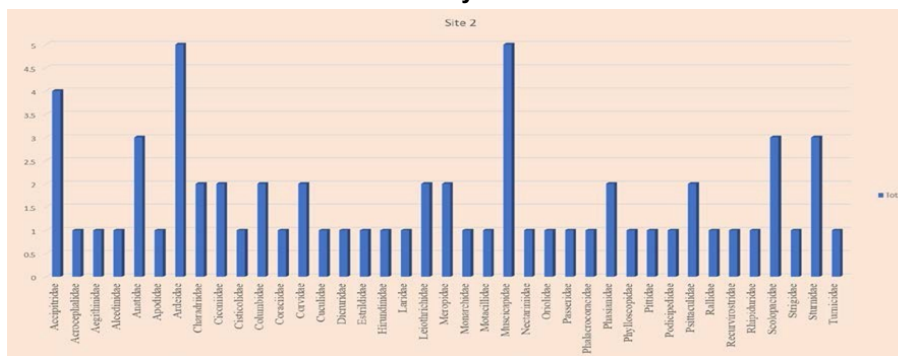


Figure 6

Relative Diversity at Site 2**Table 2**
Birds of Shahid Bhima Nayak Dam, Silavad

SI No	Order	Family	English Name	Scientific Name
1	Anseriformes	Anatidae	Indian Spot-billed Duck	<i>Anas poecilorhynch</i>
2	Anseriformes	Anatidae	Northern Pintail	<i>Anas acuta</i>
3	Anseriformes	Anatidae	Common Teal	<i>Anas crecca</i>
4	Galliformes	Phasianidae	Indian Peafowl	<i>Pavo cristatus</i>
5	Galliformes	Phasianidae	Grey Francolin	<i>Francolinus pondicerianus</i>
6	Podicipediformes	Podicipedidae	Little Grebe	<i>Tachybaptus ruficol</i>
7	Columbiformes	Columbidae	Rock Pigeon	<i>Columba livia</i>
8	Columbiformes	Columbidae	Spotted Dove	<i>Streptopelia chinensis</i>
9	Cuculiformes	Cuculidae	Asian Koel	<i>Eudynamys scolopaceus</i>
10	Caprimulgiformes	Apodidae	Common Swift	<i>Apus apus</i>
11	Gruiformes	Rallidae	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>
12	Charadriiformes	Recurvirostridae	Black-winged Stilt	<i>Himantopus himantopus</i>
13	Charadriiformes	Charadriidae	Red-wattled Lapwing	<i>Vanellus indicus</i>
14	Charadriiformes	Charadriidae	Little Ringed Plover	<i>Charadrius dubius</i>
15	Charadriiformes	Scolopacidae	Common Sandpiper	<i>Actitis hypoleucos</i>

Remarking An Analisation

16	Charadriiformes	Scolopacidae	Green Sandpiper	<i>Tringa ochropus</i>
17	Charadriiformes	Scolopacidae	Wood Sandpiper	<i>Tringa glareola</i>
18	Charadriiformes	Turnicidae	Barred Buttonquail	<i>Turnix suscitator</i>
19	Charadriiformes	Laridae	Common Tern	<i>Sterna hirundo</i>
20	Ciconiiformes	Ciconiidae	Asian Openbill	<i>Anastomus oscitan.</i>
21	Ciconiiformes	Ciconiidae	Woolly-necked Stork	<i>Ciconia episcopus</i>
22	Suliformes	Phalacrocoraci dae	Great Cormorant	<i>Phalacrocorax carb</i>
23	Pelecaniformes	Ardeidae	Black Bittern	<i>Ixobrychus flavicollis</i>
24	Pelecaniformes	Ardeidae	Grey Heron	<i>Ardea cinerea</i>
25	Pelecaniformes	Ardeidae	Great Egret	<i>Ardea alba</i>
26	Pelecaniformes	Ardeidae	Little Egret	<i>Egretta garzetta</i>
27	Pelecaniformes	Ardeidae	Indian Pond Heron	<i>Ardeola grayii</i>
28	Accipitriformes	Accipitridae	Black-winged Kite	<i>Elanus caeruleus</i>
29	Accipitriformes	Accipitridae	Shikra	<i>Accipiter badius</i>
30	Accipitriformes	Accipitridae	Black Kite	<i>Milvus migrans</i>
31	Accipitriformes	Accipitridae	Brahminy Kite	<i>Haliastur indus</i>
32	Strigiformes	Strigidae	Spotted Owlet	<i>Athene brama</i>
33	Coraciiformes	Alcedinidae	White-throated Kingfisher	<i>Halcyon smyrnensi.</i>
34	Coraciiformes	Meropidae	Green Bee-eater	<i>Merops orientalis</i>
35	Coraciiformes	Meropidae	Blue-tailed Bee-eater	<i>Merops philippinus</i>
36	Coraciiformes	Coraciidae	Indian Roller	<i>Coracias benghalensis</i>
37	Psittaciformes	Psittaculidae	Alexandrine Parakeet	<i>Psittacula eupatria</i>
38	Psittaciformes	Psittaculidae	Rose-ringed Parakeet	<i>Psittacula krameri</i>

Remarking An Analisation

39	Passeriformes	Pittidae	Indian Pitta	<i>Pitta brachyura</i>
40	Passeriformes	Oriolidae	Indian Golden Oriole	<i>Oriolus kundoo</i>
41	Passeriformes	Aegithinidae	Common Iora	<i>Aegithina tiphia</i>
42	Passeriformes	Rhipiduridae	White-throated Fantail	<i>Rhipidura albicollis</i>
43	Passeriformes	Dicruridae	Black Drongo	<i>Dicrurus macrocerc</i>
44	Passeriformes	Monarchidae	Indian Paradise-flycatcher	<i>Terpsiphone paradi</i>
45	Passeriformes	Corvidae	Rufous Treepie	<i>Dendrocitta vagabunda</i>
46	Passeriformes	Corvidae	House Crow	<i>Corvus splendens</i>
47	Passeriformes	Cisticolidae	Ashy Prinia	<i>Prinia socialis</i>
48	Passeriformes	Acrocephalidae	Moustached Warbler	<i>Acrocephalus melanopogon</i>
49	Passeriformes	Hirundinidae	Dusky Crag Martin	<i>Ptyonoprogne concolor</i>
50	Passeriformes	Phylloscopidae	Green Warbler	<i>Phylloscopus nitidu</i>
51	Passeriformes	Leiothrichidae	Jungle Babbler	<i>Argya striata</i>
52	Passeriformes	Leiothrichidae	Common Babbler	<i>Argya caudata</i>
53	Passeriformes	Sturnidae	Asian Pied Starling	<i>Gracupica contra</i>
54	Passeriformes	Sturnidae	Common Myna	<i>Acridotheres tristis</i>
55	Passeriformes	Sturnidae	Bank Myna	<i>Acridotheres ginginianus</i>
56	Passeriformes	Muscicapidae	Indian Robin	<i>Copsychus fulicatu:</i>
57	Passeriformes	Muscicapidae	Little Forktail	<i>Enicurus scouleri</i>
58	Passeriformes	Muscicapidae	Taiga Flycatcher	<i>Ficedula albicilla</i>
59	Passeriformes	Muscicapidae	Pied Bushchat	<i>Saxicola caprata</i>
60	Passeriformes	Muscicapidae	Brown Rock Chat	<i>Oenanthe fusca</i>
61	Passeriformes	Nectariniidae	Purple Sunbird	<i>Cinnyris asiaticus</i>

62	Passeriformes	Estrildidae	Red Munia	<i>Amandava amanda</i>
63	Passeriformes	Passeridae	House Sparrow	<i>Passer domesticus</i>
64	Passeriformes	Motacillidae	Citrine Wagtail	<i>Motacilla citreola</i>

Table:2
Relative Diversity at Shahid Bhima Nayak Dam, Silavadi

S.No.	Row Labels	Count of Family	Relative Diversity
1	Accipitridae	4	0.0625
2	Acrocephalidae	1	0.015625
3	Aegithinidae	1	0.015625
4	Alcedinidae	1	0.015625
5	Anatidae	3	0.046875
6	Apodidae	1	0.015625
7	Ardeidae	5	0.078125
8	Charadriidae	2	0.03125
9	Ciconiidae	2	0.03125
10	Cisticolidae	1	0.015625
11	Columbidae	2	0.03125
12	Coraciidae	1	0.015625
13	Corvidae	2	0.03125
14	Cuculidae	1	0.015625
15	Dicruridae	1	0.015625
16	Estrildidae	1	0.015625
17	Hirundinidae	1	0.015625
18	Laridae	1	0.015625
19	Leiothrichidae	2	0.03125
20	Meropidae	2	0.03125
21	Monarchidae	1	0.015625
22	Motacillidae	1	0.015625
23	Muscicapidae	5	0.078125

24	Nectariniidae	1	0.015625
25	Oriolidae	1	0.015625
26	Passeridae	1	0.015625
27	Phalacrocoracidae	1	0.015625
28	Phasianidae	2	0.03125
29	Phylloscopidae	1	0.015625
30	Pittidae	1	0.015625
31	Podicipedidae	1	0.015625
32	Psittaculidae	2	0.03125
33	Rallidae	1	0.015625
34	Recurvirostridae	1	0.015625
35	Rhipiduridae	1	0.015625
36	Scolopacidae	3	0.046875
37	Strigidae	1	0.015625
38	Sturnidae	3	0.046875
39	Turnicidae	1	0.015625
	Grand Total	64	1

Discussion

In the study location, we observed 64 species of birds. All the above species belonged to 16 orders. Order Passeriformes were dominant among them. Wetland is important for birds due to its habitat diversity, food resources, and eco-friendly farming practices, lesser disturbances etc. because the availability of food resources is different in different season, (Shiu and Lee, 2003). Gupta, et al. (2009) Studied the avian fauna of a rural pond in village "Raipur Rodan" in Karnal district in Haryana and reported 64 species of wetland birds belonging to 10 orders and 17 families. At study site Shahid Bhima Nayak Dam, Silavada, the relative diversities of birds are as follows (Order wise): Accipitriformes 6.25%, Anseriformes 4.69%, Caprimulgiformes 1.56%, Charadriiformes 12.50%, Ciconiiformes 3.13%, Columbiformes 3.13%, Coraciiformes 6.25%, Cuculiformes 1.56%, Galliformes 3.13%, Gruiformes 1.56%, Passeriformes 40.63%, Pelecaniformes 7.81%, Podicipediformes 1.56%, Psittaciformes 3.13%, Strigiformes 1.56% and Suliformes 1.56%. Shiu and Lee (2003) reported similar results in their study, the bird's species richness declined with elevation above about 1500m (with decrease in temperature). At normal level and topography species richness remained constant. The breeding season the richness reached a maximum number. The results showed that the diversity is rich in particular study areas. The alpha diversity of Shahid Bhima Nayak Dam, Silavada is 64 (α Diversity = 64). At Shahid Bhima Nayak Dam, Silavada the species richness was $S = 64$; Simpson's diversity indexes were $D = 0.0100$; Simpson's equitability indexes were $E = 0.0853$; Shannon Weiner's indexes were $H' = 2.343$.

Conclusion

We observed 64 species of birds. All the above species belonged to 16 orders. Order Passeriformes were dominant among them. The results showed that the diversity is rich in particular study areas. The alpha diversity of Shahid Bhima Nayak Dam, Silawat is 64 (α Diversity = 64). At Shahid Bhima Nayak Dam, Silawat the species richness was $S = 64$; Simpson's diversity indexes were $D = 00.100$; Simpson's equitability indexes were $E = 00.853$; Shannon Weiner's indexes were $H' = 2.343$. Based on the current study, it can be concluded that the Barwani District in different sites is in good ecological health.

Reference

1. *li, S. (2002).The book of Indian birds, 13th revised edition. Bombay Natural History Society, Bombay. (1):326.*
2. *Datta, T. (2011). Human interference and avifaunal diversity of two wetlands of Jalpaiguri, West Bengal, India. Journal of Threatened Taxa.3 (12):2253-2262.*
3. *Furness, R.W., and J.J.D. (1993).Greenwood Birds as monitors of environmental change. Chapman and Hall, New York.*
4. *Gaur, P., Shrivastava, C.S., and Gaherwal S. (2019). Spatial Variation in Avifaunal Diversity from Various Green Spaces of Indore City, Madhya Pradesh. International Journal of Current Research and Reviews.11 (14):06-15.*
5. *Gupta, R., Kaushik, T.K., and Kumar, S. (2009). Analysis of winter migratory wetland birds in Karnal district in Haryana. J. Adv. Zoo, 30 (2): 104-117.*
6. *King, D.I., and R.M. (2000).Degraaf: Birds species diversity and nesting success in mature, clear cut and shelter wood forest in northern New Hampshire, USA.For.Ecol.Manage. (129):227-235.*
7. *Kattan, G.H., Franco, P. (2004).Bird diversity along elevation gradients in the Andes of Colombia area and mass effects. Global Biogeography and Ecology. (13):451-458.*
8. *Li, Z. W. D., and Mundkur, T. (2007). Numbers and distribution of water birds and wetlands in the Asia- Pacific region. Results of the Asian Water birds Census. 2002-2004. Wetlands International, Kuala Lumpur, Malaysia.*
9. *Marquis, R.J., and Whelan, C.J. (1994).Insectivorous birds increase growth of white oak through consumption of leaf-chewing insect Ecology, (75):2007-2014.*
10. *Pandey, P., Shrivastava, C.S., Gaherwal, S. (2020). Studies of bird species abundance at VindhyaChal forest Reserve at Khargone District, (M.P.). International Journal of Recent Scientific Research. 11(8):39601-39604.*
11. *Prakash, M.M., Panwar, K., Malhotra, M., Sharma, V.K., Kaskhedikar, P., Sharma, A., Dhakad, N.K. (2004). Birds of Holkar Science College Campus Indore.Trajectory. 12(1):59-63.*
12. *Padmavati, A., Alexander, R., and Anbarasan, M. (2010). Our Nature. (8): 247-253.*
13. *Rao, R.J., and Bhatnagar, A. (2001). Biodiversity conservation in protected areas in Madhya Pradesh (India). Abstract in Nat. Sem. On Biodiversity Jiwaji University. Gwalior, 26(28):33.*
14. *Raju, D., Ramachandran, S. (2016). Photographic field guide wildlife of central India. Nation Press. (1):300.*
15. *Shiu, H.A., and Lee, P.F. (2003). Seasonal Variation in bird species Richness along Elevation Gradient in Taiwan. Acta Zoologica Taiwanica, 14(1):1-21.*
16. *The IUCN Red List of Threatened Species. Version 2017-3. < www.iucnredlist.org>.Downloaded on 13 December 2017.*