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Winter Migratory Birds Diversity on Bembla Spillway and Reservoir, Yavatmal District, Maharashtra, India

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ABSTRACT: The winter migratory birds diversity survey of Bembla spillway and reservoir was studied from September 2011 to April 2018. Bembla is located at 20.60°N latitude and 78.12°E longitude in the Yavatmal District of Maharashtra is among one of the medium project of District. During study period total 23 spots were monitored which covers almost 37.83 km area. The DSLR GPS device was used to record the coordinate and location of all stations. Result revealed a total of 102 species of winter migratory birds belonging to 5 orders and 21 families. The order Ciconiformes was found to be dominant consisting of 9 families and 52 species, while among the families; family Scolopacidae was dominant with 18 species from order Ciconiformes. According to the IUCN Red data list out of 102 winter migratory birds species 12 species were Near Threatened (NT) and 2 species were Vulnerable. Although Bembla wetland supports a large migratory birds species but a list of anthropogenic activities were noticed in and around the birding spots which directly affect on habitat degradation. The factors includes excessive fishing activity, beautification, grazing activity, agricultural activity on exposed wetland, all these factors are directly affecting and disturbing the migratory avian diversity on various birding sites. Regular monitoring will be needed for strictly implementing the conservative strategies to improve the possibilities of more migratory species visited to Bembla spillway and reservoir.

KEY WORDS: Winter migratory Birds, Survey, Diversity and Bembla dam.

I. INTRODUCTION

Avian migration is a seasonal phenomenon. Migratory birds fly hundreds and thousands of kilometers to find the best ecological conditions and habitats for feeding, breeding and raising their young. There are many different migration patterns. The majority of birds migrate from northern breeding areas to southern wintering grounds. However, some birds breed in southern parts of Africa and migrate to northern wintering grounds, or horizontally, to enjoy the milder coastal climates in winter. Other birds reside on lowlands during the winter months and move up a mountain for the summer. Migratory birds have the perfect morphology and physiology to fly fast and across long distances. Often, their journey is an exhausting one, during which they go to their limits. Exactly how migrating birds find their flyways is not fully understood. It has been shown that they are able to orientate by the sun during the day, by the stars at night, and by the geomagnetic field at any time. Some species can even detect polarized light, which many migrating birds may use for navigation at night. The present study is not carried out only to prepare the diversity list of migratory birds, but to find out their occurrence and unexpected records to create the awareness for their conservation. Of course it is need to conserve the biodiversity of birds of Bembla dam which is a most affected area because of anthropogenic activities and excessive fishing.

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Vol. 9, Issue 1, January 2020

II. LITERATURE SURVEY

The study was done on Bembla spillway and reservoir which is confined within the area of 53000 hectares which was given a big opportunities to an Ornithologist who use to visit the area for his study and research on birds. The area search is a quantitative, habitats specific (wetland and grassland) survey method that is widely applicable in most habitats, which is useful for diversity count of winter migratory birds species. The birds were observed by sitting and standing from a hiding places. The present study aims to investigate the migratory bird diversity on the Bembla spillway as no work on migratory bird diversity was carried out before on this dam, Yavatmal, Maharashtra. The investigation will be helpful in preparing a baseline data on winter migratory bird diversity for this area which helps highlight the importance of this area at Maharashtra level.

III. MATERIALS AND METHODS

The study was undertaken in Bembla spillway and Reservoir located on the bank of the river Bembla river in Yavatmal district, Maharashtra state, India. Bembla western part between 20.60°N latitude and 78.12°E and the eastern part between 20.61°N latitude to 78.12°E longitude. Reservoir covers an area of 53000 hectares which was given a big opportunities to an Ornithologist who use to visit the area for his study and research on birds. The Bembla dam is surrounded by village Koli in north, SH 15 in east and open agriculture land in west and Pahur at south direction. Study area including 23 stations and total 37.83 km area surveyed for diversity of birds. (Fig-1) The bird species survey was conducted every fourth day in early morning from 6.00 am to 9.30 am and on every Saturday and Sunday from 6.30 am to 10.30 am. The species of birds were observed by using . Binocular Nikon 10*50 X, was used for close observation of birds and for photography Nikon D7500 camera, with Lens 200-500 mm. Book of Indian Birds by Salim Ali and Birds of the Indian Subcontinent by Grimmett, Inskipp and Inskipp were used as field guides and for preparing check list.



Bembla Dam -shows 23 birding spots which covers 37.83 km area.

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IV. RESULT

S.No	COMMON NAME	SCIENTIFIC NAME	STATUS
Order: ANSERIFORMES Family: ANATIDAE			
1	GREY-LAG GOOSE	Anser anser	W
2	BAR-HEAED GOOSE	Anser indicus	W
3	RUDDY SHELDUCK	Tadorna ferruginea	W
4	GADWALL	Anas strepera	W
5	EURASIAN WIGEON	Anas Penelope	W
6	NORTHERN SHOVELER	Anas clypeata	W
7	NORTHERN PINTAIL	Anas acuta	W
8	GARGANEY	Anas querquedula	W
9	COMMON TEAL	Anas crecca	W
10	RED-CRESTED POCHARD	Rhodonessa rufina	W
11	COMMON POCHARD	Aythya ferina	W
12	FERRUGINOUS POCHARD	Aythya nyroca	W
13	TUFTED DUCK	Aythya fuligula	W
Order: PICIFORMES Family: PICIDAE			
14	EURASIAN WRYNECK	Jynx torquilla	W
Order: CORACIIFORMES Family: CORACIIDAE			
15	EUROPEAN ROLLER	Coracias garrulus	PV
Family: MEROPIDAE			
16	BLUE-TAILED BEE-EATER	Merops philippinus	BM
17	BLUE CHEEK BEE-EATER	Merops persicus	PV

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Vol. 9, Issue 1, January 2020

Family: STRIGIDAE			
18	SHORT EARED OWL	Asio flammeus	W
Order: CICONIIFORMES			
Family: SCOLOPACIDAE			
19	COMMON SNIPE	Gallinago gallinago	W
20	PIN TAILED SNIPE	Gallinago stenura	W
21	BLACK TAILED GODWIT	Limosa limosa	W
22	BAR TAILED GODWIT	Limosa lapponica	W
23	SPOTTED REDSHANK	Tringa erythropus	W
24	COMMON REDSHANK	Tringa totanus	W
25	MARSH SANDPIPER	Tringa stagnatilis	W
26	COMMON GREENSHANK	Tringa nebularia	W
27	GREEN SNADPIPER	Tringa ochropus	W
28	WOOD SANDPIPER	Tringa glareola	W
29	COMMON SANDPIPER	Actitis hypoleucos	W
30	LITTLE STINT	Calidris minuta	W
31	TEMMINCK'S STINT	Calidris temminckii	W
32	CURLEW SANDPIPER	Calidris ferruginea	PV
33	TEREK SANDPIPER	Xenus cinerus	W
34	RUFF	Philomachus pugnax	W
35	DUNLIN	Calidris alpina	W
36	PIED AVOCET	Recurvisrostra avosetta	PV
Family: CHARADRIIDAE			
37	BLACK-WINGED STILT	Himantopus himantopus	RM
38	KENTISH PLOVER	Charadrius alexandrinus	BM

International Journal of Innovative Research in Science, Engineering and Technology

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Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020

39	PACIFIC GOLDEN PLOVER	Pluvialis fulva	W
40	LESSER SAND PLOVER	Charadrius mongolus	W
41	GREY PLOVER	Pluvialis squatarola	W
42	COMMON RING PLOVER	<i>Charadrius hiaticula</i>	
43	GREATER SAND PLOVER	Charadrius leschenaultii	W
44	LITTLE RINGED PLOVER	Charadrius dubius	W
45	GREY HEADED LAPWING	Vanellus cinereus	W
Family: GLAREOLIDAE			
46	ORIENTAL PRATINCOLE	Glareola pratincola	BM
47	COLLARED PRATINCOLE	Glareola pratincola	W
Family: LARIDAE			
48	BROWN-HEADED GULL	Larus brunnicephalus	W
49	PALLAS'S GULL	Ichthyætus ichthyætus	W
50	HEUGLIN'S GULL	<i>Larus fuscus heuglini</i>	
51	BLACK HEADED GULL	Chroicocephalus ridibundus	W
52	GULL BILL TERN	Gelochelidon nilotica	PV
53	RIVER TERN	Sterna aurantia	RM
54	WHITE WING TERN	Chlidonias leucopterus	W
55	BLACK-BELLIED TERN	Sterna acuticauda	W
56	LITTLE TERN	Sterna albifrons	BM
57	WHISKERED TERN	Chlidonias hybridia	W
Family: ACCIPITRIDAE			
58	OSPREY	Pandion haliaetus	W
59	EURASIAN MARSH HARRIER	Circus aeruginosus	W
60	MONTAGU'S HARRIER	Circus pygargus	W

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

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Vol. 9, Issue 1, January 2020

61	PALLIED HARRIER	Circus macrourus	W
62	BOOTED EAGLE	Hieraaetus pennatus	W
Family: FALCONIDAE			
63	AMUR FALCON	Falco amurensis	W
Family: ARDEIDAE			
64	GREY HERON	Ardea cinerea	W
Family: PHOENICOPTERIDAE			
65	GREATER FLAMINGO	Phoenicopterus ruber	W
66	GLOSSY IBIS	Plegadis falcinellus	W
67	EURASIAN SPOONBILL	Platalea leucorodia	RM
Family: CICONIIDAE			
68	PAINTED STORK	Mycteria leucocephala	RM
69	ASIAN OPENBILL	Anastomus oscitans	W
70	BLACK STORK	Ciconia nigra	W
Order: PASSERIFORMES			
Family: LANIIDAE			
71	ISABELLINE SHRIKE	Lanius isabellinus	W
72	BROWN SHRIKE	Lanius cristatus	W
Family: MUSCICAPIDAE			
73	BLUE ROCK THRUSH	Monticola solitarius	W
74	ASIAN BROWN FLYCATCHER	Muscicapa dauurica	W
75	RED THROATED FLYCATCHER	Ficedula parva	W
76	ULTRAMARINE FLYCATCHER	Ficedula superciliaris	W
77	VERDITER FLYCATCHER	Eumyias thalassina	W
78	BLUETHROAT	Luscinia svecica	W

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020

79	BLACK REDSTART	Phoenicurus ochruros	W
80	COMMON STONECHAT	Saxicola torquata	W
81	ISABELLINE WHEATER	Oenanthe deserti	W
82	DESERT WHEATER	Oenanthe deserti	W
Family: STURNIDAE			
83	CHESTNUT-TAILED STARLING	Sturnus malabaricus	W
84	ROSY STARLING	Sturnus roseus	W
Family: HIRUNDINIDAE			
85	BARN SWALLOW	Hirundo rustica	W
Family: SYLVIIDAE			
86	CLAMOROUS REED WARBLER	Acrocephalus stentoreus	W
87	BOOTED WARBLER	Hippolais caligata	W
88	SYKES'S WARBLER	Hippolais rama	W
89	COMMON CHIFFCHAFF	Phylloscopus collybita	W
90	SULPHUR BELLIED WARBLER	Phylloscopus griseolus	W
91	GREENISH WARBLER	Phylloscopus trochiloides	W
92	LESSER WHITE THROAT	Sylvia curruca	W
Family: PASSERIDAE			
93	WHITE WAGTAIL	Motacilla personata	W
94	INDIAN PIED WAGTAIL	Motacilla dukhunensis	W
95	CITRINE WAGTAIL	Motacilla citreola	W
96	YELLOW WAGTAIL	Motacilla thunbergi	W
97	GREY WAGTAIL	Motacilla cinerea	W
98	BLYTH'S PIPIT	Anthus godlewskii	W
Family: FRINGILLIDAE			

International Journal of Innovative Research in Science, Engineering and Technology

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Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020

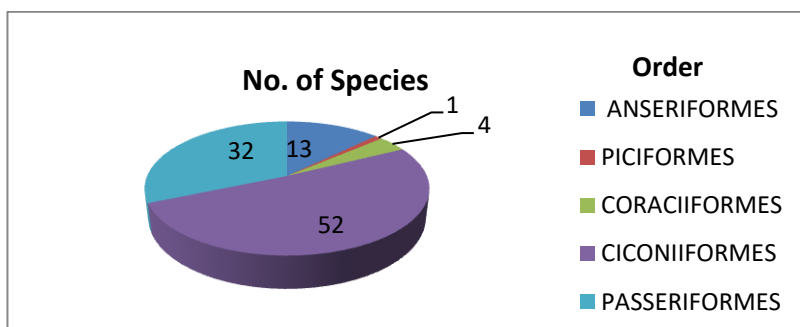
99	COMMON ROSEFINCH	Carpodacus erythrinus	W
100	GREY NECKED BUNTING	Emberiza buchanani	W
101	BLACK HEADED BUNTING	Emberiza melanocephala	W
102	RED HEADED BUNTING	Emberiza bruniceps	W

The total of 102 species of birds belonging to 5 orders and 21 families were recorded from Bembla Spillway and reservoir and its surrounded area (Table 1). This is the first bird survey record of Bembla dam in Yavatmal district of Maharashtra State which shows quite good migratory bird diversity on this Medium Water Project included 89 Widespread Winter visitor (W), 5 Passage Visitor (PV), 4 Breeding Migrant (BM) and 4 Resident Migrant (RM). These varieties of migratory winter visitor birds visit every year to this dam might be due to wide area, migratory route (flyway) and presence of ample amount of food in the form of aquatics weeds, aquatic invertebrates and diversity of fishes in the water and surrounding agriculture and grassland. The present work establishes the richness of the Bembla dam in respect of winter visitors bird fauna which are excellent indicators of healthy ecosystem. In the present study a total of one hundred and two avian species of belonging to five orders i.e. ANSERIFORMES (13), PICIFORMES (1), CORACIIFORMES (4), CICONIIFORMES, (52) PASSERIFORMES (32) and twenty one families i.e. Anatidae (13), Picidae (1), Coraciidae (1), Meropidae (2), Strigidae (1), Scolopacidae (18), Charadriidae (9), Glareolidae (2), Laridae (10), Accipitridae (5), Falconidae (1), Ardeidae(1), Phoenicopteridae (3), Ciconiidae(3), Laniidae (2), Muscipidae (10), Sturnidae (2), Hirundinidae (1), Sylviidae (7), Passeridae (6), Fringillidae (4) have been recorded (Table 2, Table 3 & Graph 1, Graph 2). According to the IUCN Red data list out of 102 winter migratory birds species 12 species were Near Threatened (NT) category like Ferruginous Pochard, Painted Stork, Black Headed Ibis, Oriental Darter,

Table-1- Diversity of Winter migratory bird along with Classification. W-Widespread Winter visitor, PV-Passage Visitor, BM-Breeding Migrant, RM-Resident Migrant

Order	No. Of Species
Anseriformes	13
Piciformes	1
Coraciiformes	4
Ciconiiformes	52
Passeriformes	32

Table 2:- Order wise number of



Graph- 1 Order wise number of species

International Journal of Innovative Research in Science, Engineering and Technology

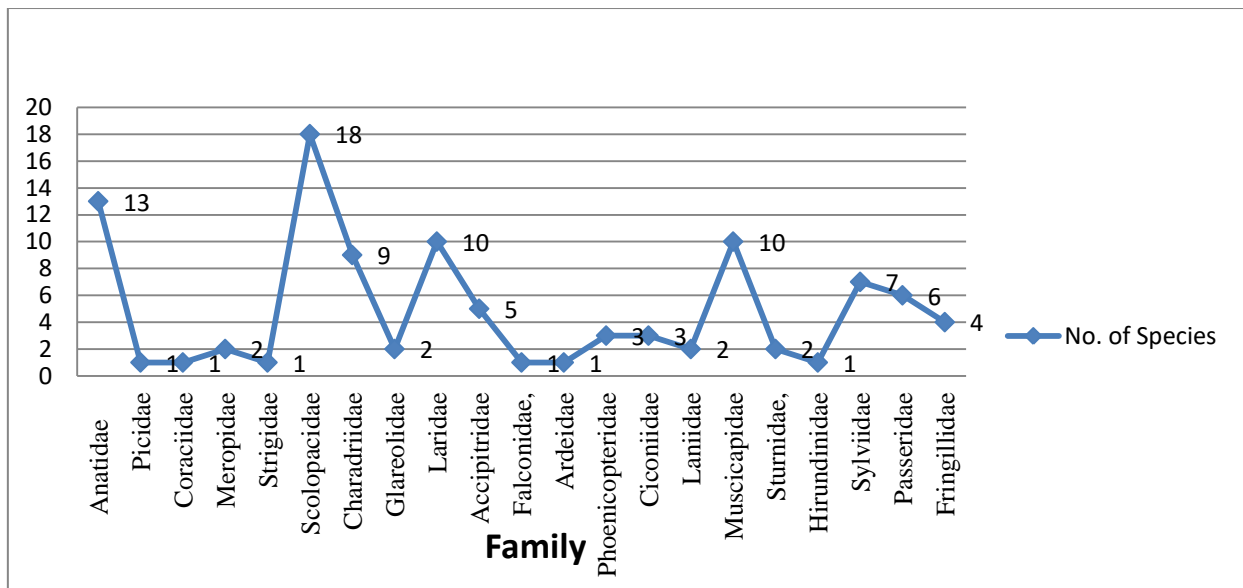
(A High Impact Factor, Monthly, Peer Reviewed Journal)

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Vol. 9, Issue 1, January 2020

Family	No. of Species
Anatidae	13
Picidae	1
Coraciidae	1
Meropidae	2
Strigidae	1
Scolopacidae	18
Charadriidae	9
Glareolidae	2
Laridae	10
Accipitridae	5
Falconidae,	1
Ardeidae	1
Phoenicopteridae	3
Ciconiidae	3
Laniidae	2
Muscicapidae	10
Sturnidae,	2
Hirundinidae	1
Sylviidae	7
Passeridae	6
Fringillidae	4

Table:2 Family wise Number of Species



Graph: 2 Family wise Number of Species

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Vol. 9, Issue 1, January 2020

Great Thickknee, Eurasian Curlew, Bartailed Godvit, Black Tailed Godvit, Curlew Sandpiper, River Tern, Pallied Harrier and Red Headed Falcon and 2 species were Vulnerable like Common Pochard and Asian woolly necked stork were recorded during study period. The order Ciconiformes was found to be dominant consisting of 9 families and 52 species, while among the families; family Scolopacidae was dominant with 18 species from order Ciconiformes. As per observations it is proved that Bembla wetland supports a large migratory birds species but a list of anthropogenic activities were also noticed in and around the birding spots which directly affect on habitat degradation and population of species. The factors includes excessive fishing activity which covers a large area by using various types of nets, the eastern site grassland area were developed for commercial and economical purposed under beautification, hole day most of wetland and grassland used for cattle grazing activity, agricultural activity on exposed wetland particularly during winter visitors but all these practices are directly affecting and disturbing the migratory avian diversity and their number on various birding sites. Regular monitoring will be needed for strictly implementing the conservative strategies to improve the possibilities of more migratory species visited to Bembla spillway and reservoir.

V. CONCLUSION

Bembla spillway and reservoir supports a rich diversity of winter migratory birds. The present study provides baseline data for monitoring the diversity of migratory bird species on the birding spots of the dam. The total of 102 species of birds belonging to 5 orders and 21 families were recorded from Bembla Spillway it showed that the study area is home for various migratory bird species, it could be due to presence of flyway and presence of various habitat types. As per IUCN Red data list out of 102 winter migratory birds species 12 species were Near Threatened (NT) and 2 species were Vulnerable was notice and these records are very important for this area. Future research on the population dynamics and feeding ecology of winter migratory birds on the reservoir will help to understand the birds more accurately and thereby pave the way for implimentation of their better conservation strategies for to avoid anthropogenic activities.

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