

STUDY OF WADERS DIVERSITY FROM MOREL DAM WETLAND OF DAUSA DISTRICT IN RAJASTHAN

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Abstract

Waders are the most important group of wetland birds that are vital for smooth functioning of these ecosystems. Shorebirds called waders are one of the important indicators of richness of the wetlands. Waders are become increasingly intolerant of even slight ecosystem disturbance. This research exercise is carried out for successive two years from March 2015 to February 2017 to study wader diversity in Morel dam wetlands of dausa district of Rajasthan, India. In present investigation 55 species belongs to 15 families of 6 orders were recorded from Morel dam area . Out of these 55 species, family Scolopacidae has maximum 16 species followed by Ardeidae 10, Rallidae having 5 species, Charadriidae having 4 species, Phalacrocoracidae, Laridae, Ciconiidae and Threskiornithidae, having 3 species each. Recurvirostridae 2, Burhinidae, Rostratulidae, Glareolidae, Phoenicopteridae and Gruidae having 1 species each. The effort of this baseline study is to make available the information about biodiversity of waders to recognize these sites as IBA habitat for the conservation of waders and water bird population because baseline information is a proviso for setting up and monitoring executive actions for these birds and their habitats. The majority of wetland birds observed during this study were wide spread migratory comprising 52.72 % of the total species, followed by widespread resident 47.27%. increasing anthropogenic activities are the major threats to these precious abodes, this research exercise is an attempt to discourse wader diversity and will be useful in futuristic wetland management practices.

Key words: Morel dam, waders, Biodiversity, wetland.

Introduction

Natural ecosystems have been overexploited and even destroyed by the rapidly increasing anthropogenic activities and industries. When consequent environmental changes exceed the tolerance limit, species habitat change also becomes ultimate cause for long term changes in the bird distribution. Abundance of birds represents healthy ecosystem. Aquatic biodiversity and healthy ecosystem both are dependent on hydrologic regime and geological conditions. The maintenance of healthy aquatic ecosystem is required for ecological balance, agriculture, widespread biodiversity and human survival. The goal of this irreplaceable biodiversity is to minimize its loss through sustainable management, conservation practices and environmental ethics. As per the Ramsar Convention signed in 1971 by 169 parties, wetlands have great importance to conserve vast number of biota includes flora and fauna. Wetlands vary according to their origin, geographical location, water regime, chemistry, dominant plants and soil or sediment characteristics. Wetlands are the main custodians of the water birds (Weller, 1999). Wetlands attract a large number of migratory and resident bird species. Wetlands are defined as transitional zone between terrestrial and aquatic ecosystem where land is covered by shallow water (Mitsch & Gosselink, 1986). They are also known as biological supermarkets because they provide extensive food chain and rich in biodiversity. Wetlands are often described as 'Kidneys of landscape' that support vast biodiversity of flora and fauna. It also provides food and shelter to organisms that thrive in (Roy et al., 2016). Waders are simply used terms to describe a group of small to medium sized birds, gregarious in nature, and living at the edge of the water, i.e. waders usually occupy the interphase zones of a water body. the Indian sub-continent is an important wintering area for many species of shore and wading birds, and especially waders. They can be found in fresh, brackish

and saltwater areas, though most of the species tend to prefer freshwater habitats. Open water, shallow water, marshes, mudflats, water banks, ponds and flooded areas are all popular habitats for wading birds. Waders represent the greatest species diversity (Tak et al., 2003). Water birds and wetlands are inseparable elements (Grimmett & Inskipp, 2007) Waders have been seen wading through the shallow waters and occasionally probing along dry margins of the wetland.

Study Area

Morel Dam, is homogeneous earthen dam on Morel River near kankariya and Pilukhera village Dausa district in state of Rajasthan in India and located at $76^{\circ}20'15''$ N longitude and $26^{\circ}26'36''$ E latitude (figure 1 & 2). Mainly used for irrigation purposes and commercial fishing. It is too shallow towards its periphery resulting in production of muddy marshes towards the margin. It is surrounded by agricultural lands with adjacent government lands. Morel dam is a major irrigation project of Dausa and Sawaimadhopur district which was constructed in 1952. This dam is situated 15 km away from lalsot tehsil headquarter on the morel river near kankariya village Dausa Sawaimadhopur road. Morel river is a tributary of banas river. Morel river joins banas river near Malarnadungar railway station. The catchment area of this dam is 3345 Sq km and the total CCA 19393 Hac. the total length of the dam is 5364 meters. The total fill gauge of the dam is 30 feet with a total fill capacity of 2707 Mcft with 2496 Mcft of live and 211 Mcft of dead storage. This dam irrigates an area of about 5013 hectares. Two canals from this dam are irrigated by the eastern canal and the main canal. The level of the eastern canal is 6 feet higher than the level of the main canal. Eastern canal is under the control of executive engineer water resources division, Dausa and main canal is controlled by the executive engineer water resources division, Sawai madhopur. The Dam is an attracting sight for many wetland birds as the Dam supports good nesting habit and habitats No aquatic weeds and lilies are found in submerging area of the dam. The vegetation across the dam dwells with the Neem, Acacia drepanolobium, Acacianilotica, Acacia leucophloea, Prosopis cineraria, Zuliflora sp, Calotrophis sp, Dichrostachys cineria, Ficus religiosa, Ficus bengalensis, Caparis deciduas, Saccharum spontaneum, Saccharum munja, Saccharum officinarum, wheats, gram and mustard field and grasses. Animal food sources include Zooplankton, Pisces, Molluscans and insects. The present study aims to document the checklist of waders diversity of Morel dam, lalsot Dausa since no studies are carried out on the wader birds prevailing in this area.



Figure 1. View of Morel dam

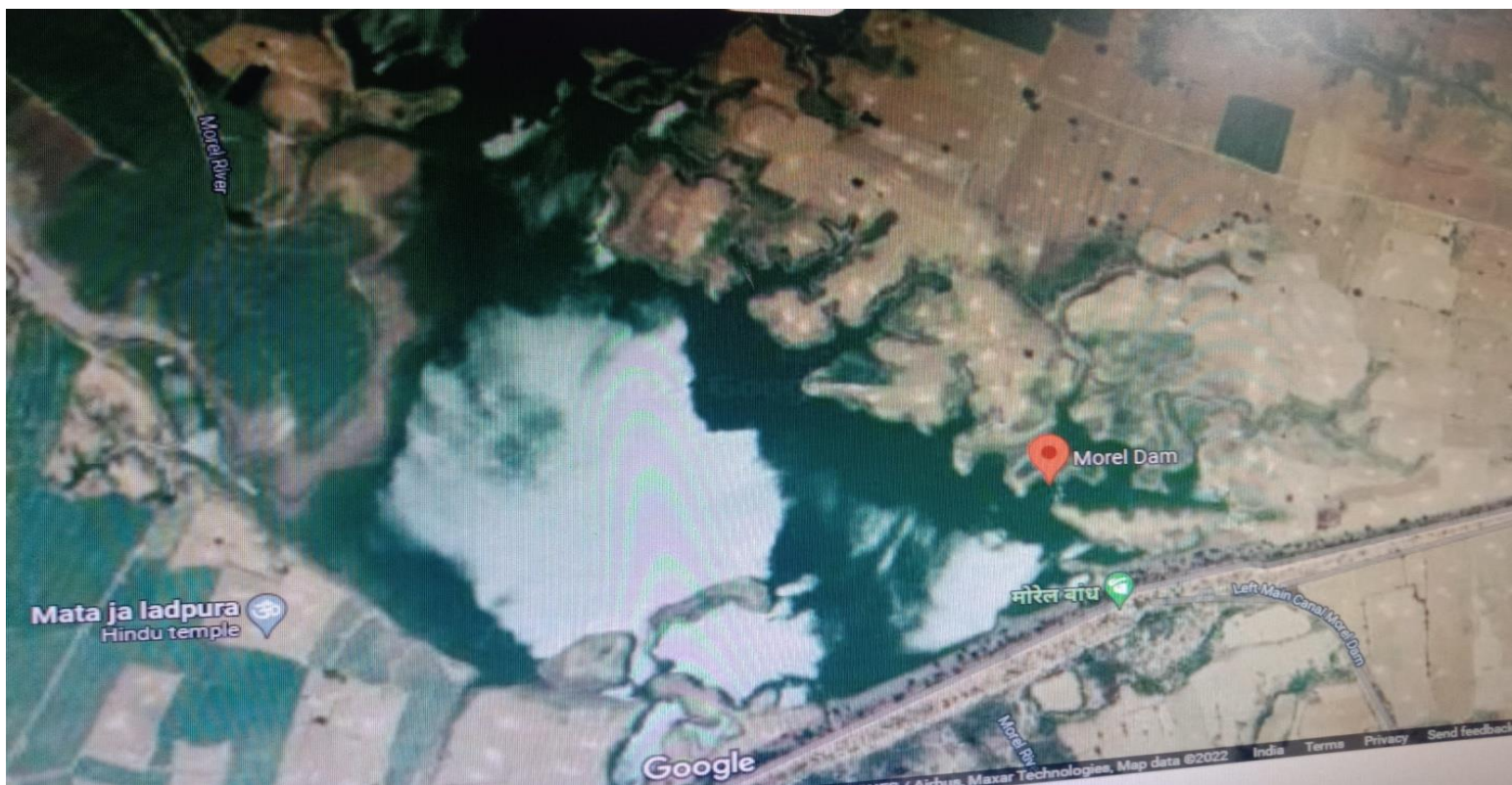


Figure 2. Settelite image of Morel dam

Materials and Methods

The checklist is prepared based on the field work conducted during March 2015 to February 2017. For documentation of Avifauna, we have travelled along the road side, along the edge of reservoir, wetland area of Morel Dam, back water and in nearby places. The birds are observed and recorded at various locations of the selected site, Binoculars and cameras were used for bird watching and to take photograph them. Observations were carried twice in a week in the morning and evening hours using open ended line transect method and point count method with the aid of an Olympus 10x50 binoculars and data was supported with photography using Sony ALT56 camera. The birds were identified using standard field guide books of Ali & Ripley, Grimmett et al. and Salim Ali.

Result and discussion

This was as a premier and scientific study of waders of this wetland. Waders are considered as a good bio-indicators and useful models of the wetlands for studying the various environmental problems (Mistry et al, 2015). The study shows that Morel dam is an important site for wintering waders. During the study period a total of 55 species of waders were recorded and identified in study area. In present investigation 55 species belongs to 15 families of 6 orders were recorded from Morel dam area. Out of these 55 species, family Scolopacidae has maximum 16 species followed by Ardeidae 10, Rallidae having 5 species, Charadriidae having 4 species, Phalacocoridae, Laridae, Ciconidae and Threskiornithidae, having 3 species each. Recurvirostridae 2, Anhingidae Burhingidae, Rostratulidae, Glareolidae, Phoenicopteridae and Gruidae having 1 species each respectively. Out of which 29 were recorded as migratory and 26 species reported as resident. In figure 3. Among the birds recorded nine globally threatened species were recorded, such as Oriental darter, Common crane, Painted stork, Wolly-necked stork, Eurasian curlew, Great thick-knee, Black-headed Ibis, and River Tern are the 9 species belongs to Near threatened category, indian skimmer 1 bird species belongs to endangered (IUCN 2016). These water birds were found to utilize different wetland habitats extensively for foraging, nesting and roosting on the emergent and fringed vegetation. Water birds, being generally at or near the top of most wetland food chains are highly susceptible to habitat disturbances and are therefore good indicators of general condition of aquatic

habitats (Kushlan, 1992). The rich diversity of the wetland birds documented during the present study may be because of availability of varied sources of feed as well as foraging. The wetland birds are in general being heterogeneous in their feeding habits (Ali and Ripley, 1987). Thus, wetland birds exploit a variety of habitats and depend upon a mosaic of microhabitats for their survival. Wheat, gram fields with stray trees and scattered vegetation cover might have extended comfortable shelter and suitable foraging grounds for the wetland birds. This habitat by supporting different food sources like fish, crustaceans, Mollusca, invertebrates and planktons further add to the diversity of wetland birds. This indicates that the habitat is more suitable and supports all the migratory birds as well as resident birds by providing immense food and little space to breed. Every year from October onwards a considerable number of water birds reach the wetland. Highest bird density was recorded during winter months, when the anthropogenic activities are minimum. High abundance of waders in a particular wetland usually depends on availability of food, nesting sites and predation risk. Morel dam wetland is an important natural wetland of district Dausa, Rajasthan rich in wader fauna because it provides ample of food items, sufficient water supply throughout the year, breeding and nesting grounds for large number of migratory and resident waders. Present study reports that Purple moorhen and Purple heron are the most beautiful common water birds found in this wetland. This is the most common breeding resident of Morel dam. Grey heron, Common Red shank, Spotted Red shank, Little Stint, and common Sand Piper, Marsh sand piper, Sanderling, Pied avocet, Blacktailed godwit, curlew sand piper were recognized as Wintering waders in Morel dam, were highly susceptible to continuous anthropogenic pressures in the form of cattle grazing, hunting, fishing, and expansion of crop lands.

Conclusion

Study concludes that this water body is facing multifold pressure due to anthropogenic pressure. The land area of Morel dam is being cultivated by unauthorized people which is ending the habitat of many bird species. The agro-ecosystem of this area are degraded or destroyed due to encroachment for the expansion of agriculture fields. The effort of this baseline study is to make available the information about biodiversity of waders to recognize these sites as IBA habitat for the conservation of Waders and water bird population because base line information is a proviso for setting up and monitoring executive action for these birds and their habitats.

Table: 1 Check List of Waders observed during the study period at Morel dam and its Vicinity.

S.No.	Order	Family	Scientific name	Common name	Migratory status	IUCN status
1	Suliformes	Anhingidae	<i>Anhinga melanogaster</i>	Oriental darter	M	NT
2	Suliformes	Phalacrocoracidae	<i>Microcarbo niger</i>	little cormorant	R	LC
3	Suliformes	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	Great cormorant	R	LC
4	Suliformes	Phalacrocoracidae	<i>Phalacrocorax fuscicollis</i>	Indian cormorant	R	LC
5.	Charadriiformes	Laridae	<i>Chlidonias hybrid</i>	Whiskered tern	M	LC
6.	Charadriiformes	Laridae	<i>Sterna aurantia</i>	Indian river tern	R	NT
7	Charadriiformes	Laridae	<i>Rynchops albicollis</i>	Indian Skimmer	R	EN
8	Charadriiformes	Burhinidae	<i>Esacus recurvirostris</i>	Great thick-knee	R	NT
9	Charadriiformes	Recurvirostridae	<i>Himantopus himantopus</i>	Black-winged stilt	R	LC
10	Charadriiformes	Recurvirostridae	<i>Recurvirostra avosetta</i>	Pied avocet	M	LC
11.	Charadriiformes	Charadriidae	<i>Vanellus indicus</i>	Red-wattled lapwing	R	LC
12.	Charadriiformes	Charadriidae	<i>Vanellus malabaricus</i>	Yellow-wattled lapwing	R	LC
13.	Charadriiformes	Charadriidae	<i>Charadrius alexandrinus</i>	Kentish plovers	M	LC
14.	Charadriiformes	Charadriidae	<i>Charadrius dubius</i>	little ringed plover	M	LC
15.	Charadriiformes	Rostratulidae	<i>Rostratula benghalensis</i>	Greater painted-snipe	R	LC
16.	Charadriiformes	Scolopacidae	<i>Limosa limosa</i>	Black-tailed godwit	M	NT
17.	Charadriiformes	Scolopacidae	<i>Calidris pugnax</i>	Ruff	M	LC
18.	Charadriiformes	Scolopacidae	<i>Calidris temminckii</i>	Temminck's stint	M	LC
19.	Charadriiformes	Scolopacidae	<i>Calidris minuta</i>	little stint	M	LC
20.	Charadriiformes	Scolopacidae	<i>Gallinago gallinago</i>	Common snipe	M	LC
21.	Charadriiformes	Scolopacidae	<i>Actitis hypoleucos</i>	Common sandpiper	M	LC
22.	Charadriiformes	Scolopacidae	<i>Tringa ochropus</i>	Green sandpiper	M	LC

23.	Charadriiformes	Scolopacidae	<i>Tringa stagnatilis</i>	Marsh Sandpiper	M	LC
24.	Charadriiformes	Scolopacidae	<i>Tringa glareola</i>	wood sandpiper	M	LC
25.	Charadriiforme	Scolopacidae	<i>Calidris alpine</i>	Dunlin	M	LC
26.	Charadriiforme	Scolopacidae	<i>Calidris alba</i>	Sanderling	M	LC
27.	Charadriiformes	Scolopacidae	<i>Tringa erythropus</i>	Spotted redshank	M	LC
28.	Charadriiformes	Scolopacidae	<i>Tringa nebularia</i>	Common greenshank	M	LC
29.	Charadriiformes	Scolopacidae	<i>Tringa tetanus</i>	common redshank	M	LC
30.	Charadriiformes	Scolopacidae	<i>Numenius sarquata</i>	Eurasian curlew	M	NT
31.	Charadriiformes	Glareolidae	<i>Glareola maldivarum</i>	oriental pratincole	M	LC
32.	Charadriiformes	Scolopacidae	<i>Calidris ferruginea</i>	curlew sandpiper	M	LC
33.	Phoenicopteriformes	Phoenicopteridae	<i>Phoenicopus roseus</i>	Greater flamingo	M	LC
34.	Ciconiiformes	Ciconiidae	<i>Anastomus oscitans</i>	Asian openbill	M	LC
35.	Ciconiiformes	Ciconiidae	<i>Ciconia episcopus</i>	Woolly-necked stork	M	NT
36.	Ciconiiformes	Ciconiidae	<i>Mycteria leucocephala</i>	Painted stork	R	NT
37.	Gruiformes	Gruidae	<i>Grus grus</i>	Common crane	M	NT
38.	Gruiformes	Rallidae	<i>Gallinula chloropus</i>	Common moorhen	R	LC
39.	Gruiformes	Rallidae	<i>Fulica atra</i>	Eurasian coot	R	LC
40.	Gruiformes	Rallidae	<i>Porphyrio poliocephalus</i>	Grey-headed swamphen	R	LC
41.	Gruiformes	Rallidae	<i>Porphyrio porphyrio</i>	Purple swamphen	R	LC
42.	Gruiformes	Rallidae	<i>Amaurornis phoenicurus</i>	White-breasted waterhen	R	LC
43.	Pelecaniformes	Ardeidae	<i>Ixobrychus sinensis</i>	Yellow bittern	R	LC
44.	Pelecaniformes	Ardeidae	<i>Ardea cinerea</i>	Grey heron	R	LC
45.	Pelecaniformes	Ardeidae	<i>Ardea purpurea</i>	Purple heron	M	LC
46.	Pelecaniformes	Ardeidae	<i>Nycticorax nycticorax</i>	Black crown night heron	R	LC
47.	Pelecaniformes	Ardeidae	<i>Ardea alba</i>	Great egret	R	LC
48.	Pelecaniformes	Ardeidae	<i>Egretta garzetta</i>	little egret	R	LC
49.	Pelecaniformes	Ardeidae	<i>Bubulcus ibis</i>	Cattle egret	R	LC
50.	Pelecaniformes	Ardeidae	<i>Ardeola grayii</i>	Indian pond heron	R	LC
51.	Pelecaniformes	Ardeidae	<i>Egretta gularis</i>	Western reef heron	M	LC
52.	Pelecaniformes	Ardeidae	<i>Ardea intermedia</i>	Intermediate Egret	R	LC
53.	Pelecaniformes	Threskiornithidae	<i>Threskiornis melanocephalus</i>	Black-headed ibis	R	NT
54.	Pelecaniformes	Threskiornithidae	<i>Platalea leucorodia</i>	Eurasian spoonbill	R	LC
55.	Pelecaniformes	Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy ibis	M	LC

(Keys: R-Residential, M- Migratory, IUCN Status: VU- Vulnerable, NT- Near Threatened, EN-Endangered, LC- Least Concern. Based on the IUCN Red List 2016)





Figure 3. Some glimpses of Morel dam

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